

# **COWRA BRIDGE PROJECT**

## **REPORT ON ITS PRESERVATION AND LANDMARKING**

**JANUARY - SEPTEMBER 1990**

# **COWRA BRIDGE PRESERVATION PROJECT**

A joint project of the Cowra Shire Council and the School  
of Civil Engineering, University of New South Wales

## **REPORT ON CONCAMP 1990**

### **INTRODUCTION**

Stage 1 of the student involvement in this project took place during CONCAMP '89, 23 - 29 September 1989, and a report was distributed in the following November. The principal achievements were some grit-blasting and painting of the ironwork (completion was prevented by the bottom of the truss being at ground level), the potting of four piers and testing the feasibility of pushing and raising the 120 tonne truss using simple hydraulic jacks.

Stage 2, CONCAMP '90, was scheduled for September 1990 with three main tasks,

1. place truss on the piers (if not already done)
2. complete grit-blasting and painting the ironwork
3. grit-blasting and applying preserving oil to the timber of the truss.

### **BETWEEN CONCAMPS**

The following works were accomplished,

- (a) with the four piers potted only 1.5m into the alluvial top soil, the bearing capacity to support the truss would have been inadequate. Consequently, reinforced collars were attached to the southern piers, and stub beams were welded to the northern piers and their undersides packed with ironbark timbers. This work was donated by the combined efforts of Lachlan Steel Fabrications Pty Ltd and Tom Bryant Concrete during January 1990.



(b) the 120 tonne truss was lifted onto the piers by a group of hired cranes on 14 February 1990. Although a seemingly high cost solution at \$11,000, it had many advantages over the primitive jacking-and-pushing procedure, particularly, it was all done SAFELY by experts in FOUR HOURS , and, it met the requirement of the Shire Council's Parks Superintendent to LANDSCAPE AND SEED PRIOR TO WINTER . Other techniques were likely to delay matters for a year.

(c) during winter, persistent rains and high river levels affected the site culminating in the flood of August 3-4 when the water level reached the underside of the truss, 2.5m above the landscaped area. The truss and the piers survived remarkably well. There was scouring around all piers of the landscape fill and some damage to the stub beams of the north-east pier. Council staff repaired the stub beams, covered both sets of stub beams with concrete supplied by Lynch & Moodie and completed welding the diaphragm between the northern piers. The southern scours were backfilled during CONCAMP week.

(d) during the two weeks before the September CONCAMP the Dubbo Bridge Gang of the Roads and Traffic Authority grit-blasted the now accessible ironwork and applied a primer coat of paint, and grit-blasted all the timber. This was a significant contribution to the project.

## PLANNING FOR CONCAMP '90

This construction camp involved twice the number of students as last years camp, 45 students and 4 supervising lecturers, the aim being to complete the project within the two years promised to Council. A Specification was issued in early August (copy attached) and planning began immediately. The students formed two companies, ICE CUBE CONSTRUCTIONS and CUBE ROOT CONSTRUCTIONS, both answerable to CUBE CONSTRUCTIONS (the controlling Authority), but each adopted a different strategy for completing their halves of the project. The structure had been "split" down the middle thereby creating an eastern and western half.

ICE CUBE CONSTRUCTIONS chose to use mobile equipment for reaching the timber members, particularly the upper parts and were able to operate a flexible boom with an end cage and a scissor-lift platform donated by Coates Hire. CUBE ROOT CONSTRUCTIONS however chose to use scaffolding donated by GKN KWIKFORM. But both companies used simple portable scaffolding to reach most of the low-level ironwork for painting.

Both companies met weekly during August and September to plan all aspects of their parts of CONCAMP including transport, accommodation and meals as well as the technical details. All tasks were identified and sub-groups or individuals were assigned to achieve the objectives.

The simulation of real world rivalry was achieved by making the companies prepare "competitive tenders" and their separation flowed through to separate accommodation arrangements, sponsorships as well as the basic construction procedures noted above.

However, there were a number of one-off jobs, the heritage display and media coverage for example, so a liaison committee was established to allocate these jobs and see that the friendly rivalry did not get out of hand.

## **CONCAMP '90**

The construction camp officially began on the site of the truss at 2pm Saturday 22nd September 1990. An advance party had arrived the day before to take delivery of the mobile equipment, the scaffolding and the site store. It concluded on Friday 29th September at 2:30pm just before the Opening Ceremony at 3pm.

The most distinguishing feature of the CONCAMP week was the excellent weather. Apart from a brief shower on the Tuesday morning, the days were clear, sunny and warm which was in marked contrast to the almost continuous wet-cold conditions during the winter months.



As for the CONCAMP work, its distinguishing feature was that it became a resource allocation exercise without the problem-solving component of the 1989 CONCAMP. But this did not diminish the value of the work experience to the students. Effectively organising a work force to do seemingly mundane repetitive work and achieve the goals in a tight time frame was soon recognised as an important part of project management.

In terms of rate of achievement, ICE CUBE with their mobile equipment "won" by "finishing" Tuesday evening. But their success has to be qualified by the fact that the weather held good. Had it rained to any marked degree, the mobile equipment would have bogged in the softened ground. Also, ICE CUBE's haste led to a quality control problem so much so that the RTA Inspector (Don Willey) required some patch-painting on the Thursday.

The CUBE ROOT team had a far more physical task of erecting, dismantling and re-erecting scaffolding but the work was virtually weather-independent. Also, it provided a good working platform for good first-time painting so their quality control was able to meet the inspection standards.

The overall result was that all goals were achieved by Thursday evening with only site clean-up and the Opening Ceremony on Friday. The success was monitored and reported by the Cowra Guardian and Prime TV.

## **SPONSORSHIP**

Support for the project before and during CONCAMP '90 was excellent and beyond initial expectations. A complete list of sponsors was given to Cowra Shire Council during October. Local support was initially hesitant but quickly accelerated as the realities of a successful conclusion became more evident. Eventually 30 organisations and individuals from Cowra contributed in a variety of ways, food, accommodation, equipment, materials and cash.

The students were able to generate enough support that their costs were met without calling for funds from the School of Civil Engineering or from the Cowra Shire Council.

The latter, of course, were a prime sponsor and gave invaluable support through the expertise of their engineering and works staff.

But the big sponsors were the large corporations based in Sydney who recognised the heritage merit of the project, the commendable community involvement and the significance of this type of activity to engineering education. They may well employ many of the CONCAMP participants.

## ACKNOWLEDGEMENTS

The supporters and sponsors have been acknowledged in separate ways, by the Shire Council, Dr. Fraser, the students and, with their names on the credit board. But there is a body of people whose association with the project during the past two years has been crucial to its success. Their direct involvement is gratefully acknowledged,

Jon O'Brien	Senior Lecturer, Sch Civil Eng'g, UNSW
George Nawar	Lecturer, Sch Civil Eng'g, UNSW
Ron Wakefield	Lecturer, Sch Civil Eng'g, UNSW
Don Willey	Bridge Inspector, RTA
Howard Smith	Deputy Shire Engineer, Cowra Shire
Col Fleidner	Overseer, Cowra Shire
John Apps	Workshop foreman, Cowra Shire
Derek, Marty, Chris, Carl, the welder and Paul Devery,	Cowra Shire



## OPENING CEREMONY

Joint arrangements by UNSW students, Cowra Shire Council and Cowra Development and Tourist Corporation.

- Date and time:- Friday 28 September 1990 at 3pm
- Location:- The car park near bridge site (Visitors Centre if raining)
- P A system:- Cowra Shire Council - portable power source
- Furniture:- Cowra Shire Council - lecturn, 100 seats
- Refreshments:- C D & T C supply afternoon tea at Visitors Centre
- Publicity:- Students to approach Cowra Guardian and Prime TV at Orange
- Credit board cover:- UNSW banner
- Invitations:- Sample attached from Don Fraser's word processor
- Guest list:- Councillors and members of CD&TC plus prepared list
- Procedure:-
  - 3pm Introduction, Councillor Rod Blume
  - 3.05 Shire President Cr Treasure & unveil credit board
  - 3.15 Don Fraser & present I. E. Aust plaque to sub-committee
  - 3.25 Student Rod White
  - 3.30 Close

## CONCLUSION

At 3pm on Friday 28th September 1990, Cowra was presented with a unique cultural/heritage souvenir, a preserved truss from its famous 1893 bridge over the Lachlan River. Everyone associated with the project can be justly proud of the achievement.

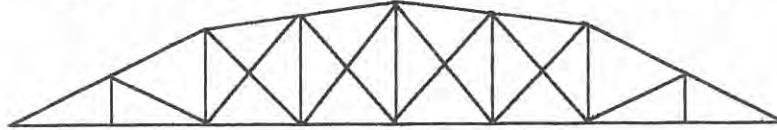
The contribution of engineers and their works to society tends to be taken for granted and is often forgotten, but, the preserved truss is a dramatic physical statement, on a grand scale, that affirms Cowra's awareness of the part played by the bridge in the development and prosperity of Cowra and its district.

D. J. Fraser (Dr)

for CUBE CONSTRUCTIONS

December 1990

## **COWRA BRIDGE PRESERVATION**



### **OPENING CEREMONY**

FOLLOWED BY AFTERNOON TEA AT THE VISITORS CENTRE

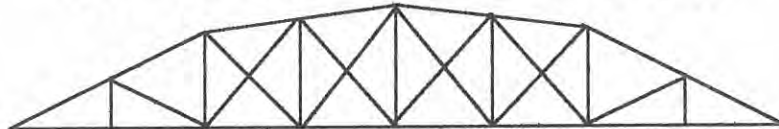
**FRIDAY 28TH SEPTEMBER 1990 AT 3PM**

**AT THE BRIDGE SITE COWRA**

A CORDIAL INVITATION IS EXTENDED TO

*Councillor C. P. Treasure  
Shire President*

## **COWRA BRIDGE PRESERVATION**



### **OPENING CEREMONY**

FOLLOWED BY AFTERNOON TEA AT THE VISITORS CENTRE

**FRIDAY 28TH SEPTEMBER 1990 AT 3PM**

**AT THE BRIDGE SITE COWRA**

A CORDIAL INVITATION IS EXTENDED TO

*Mr Geoff West  
Group Business Development Manager, AMATEK*



# 1990 COWRA CONSTRUCTION CAMP

## SPECIFICATION

### INTRODUCTION

One truss of the 1893 bridge over the Lachlan River was saved during demolition in January 1989 together with four portions of original piers and all placed on ground level adjacent the new concrete bridge. The principal events since then were potting of the four piers and the use of cranes to lift the truss onto them. The Cowra Shire Council have landscaped the area around the truss.

### THE TASK - AUGUST/SEPTEMBER 1990

Complete the work of making the truss a visually attractive monument to its engineering significance and its contribution to Cowra's heritage.

### PRELIMINARY WORKS

Following the near-record flood on Friday 3rd August, which saw the water level reach the underside of the truss, an inspection revealed that the whole structure had survived remarkably well. The scouring around each pier only affected the landscape filling and did not disturb the foundations. However, the flood did show that the stub-beams attached to the northern piers were vulnerable to damage. Consequently, the Shire Council arranged to have the stub-beams on the NE pier relocated and rewelded at a lower level and the timber packing repositioned. Both sets of stub-beams to the northern piers were then covered by protecting concrete supplied by Lynch & Moodie on Friday 17th August.

Arrangements have been made for the Roads and Traffic Authority to grit blast the ironwork of the piers and of the composite truss and apply a coat of white zinc phosphate primer paint, then grit blast the timber members of the truss. This work will commence on September 3rd and is estimated to take 2 weeks.

#### WORK FOR STUDENTS' CONCAMP'90

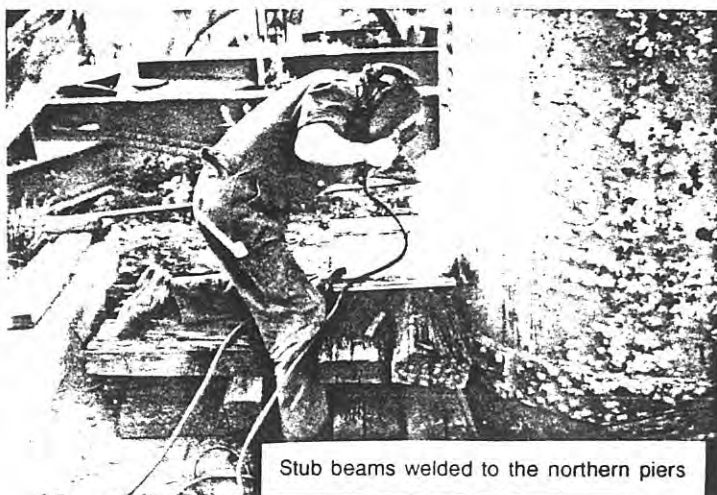
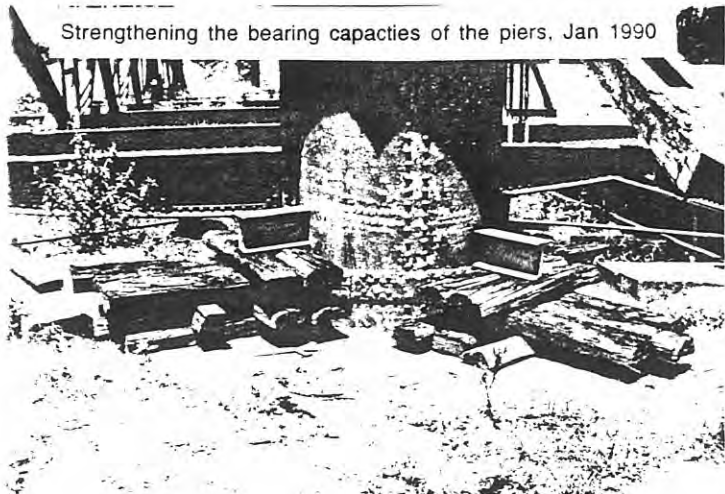
The following works are planned for completion during the Construction Camp from Sat 22 to Sat 29 September 1990,

1. Apply an intermediate and a finish coat of grey ferrodor paint to the primed ironwork. The area comprises seven cross girders, the southern portions of the bottom chords, the perimeters of the four piers and the two diaphragms between the piers. The paint, donated by ICI Dulux, is at the Cowra Shire Depot.
2. Apply one coat of copper naphthenate preserving oil to the timber members of the truss, an estimated area of 700 sq m. The oil, donated by KOPPERS, is also at the Council Depot.
3. Construct a concrete display platform on which to place heritage items associated with the bridge, a portion of concrete-filled pier, parts of the original bridge bearings and an old clam-shell excavator (ex Council). Location to be agreed to by Cowra Shire Council.
4. Generate the support/sponsorship of equipment and cash to implement the work.
5. Make and erect a credits board to acknowledge this support.
6. Attach a bronze commemorative plaque, supplied by the Institution of Engineers, Australia. Location of the plaque to be agreed to by the Cowra Shire Council.
7. Arrange an unveiling ceremony in conjunction with the Cowra Shire Council. Include all interested local parties, contributors to the project, the Institution of Engineers, the University of NSW etc etc.

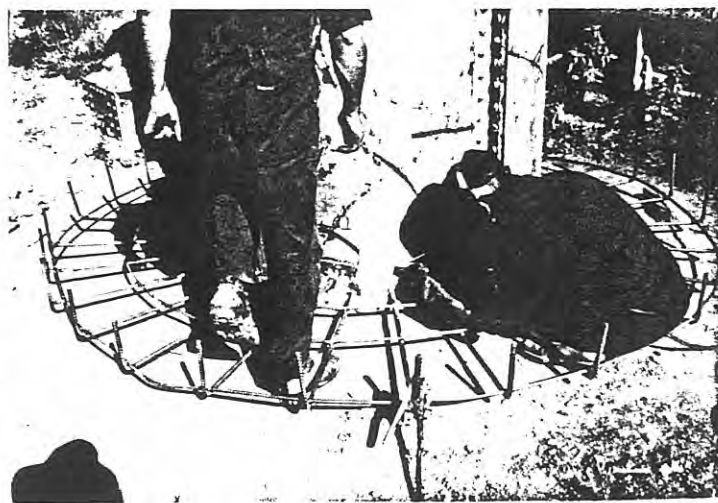
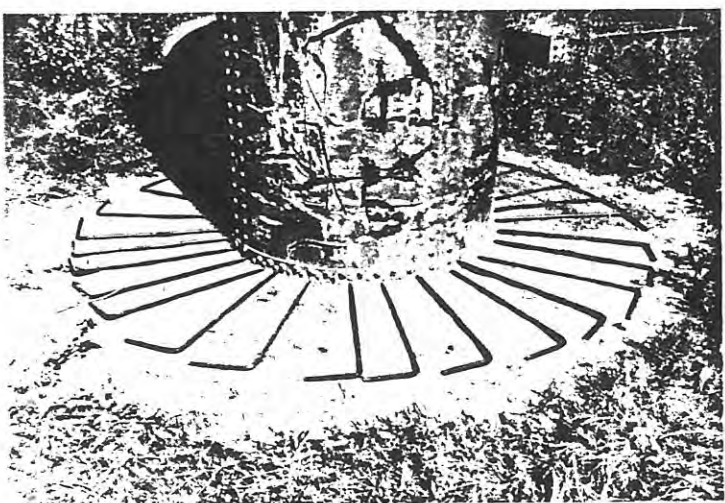
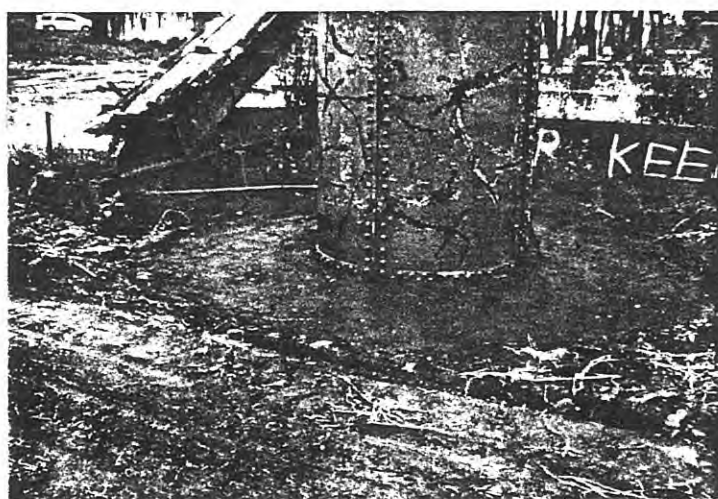
If all goes according to schedule, the relocation, reconstruction and preservation of this wonderful old structure will have been completed within the promised two year timetable.

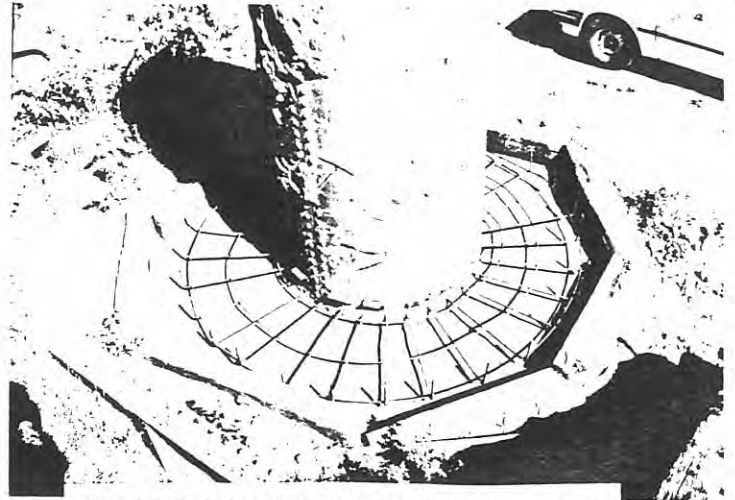
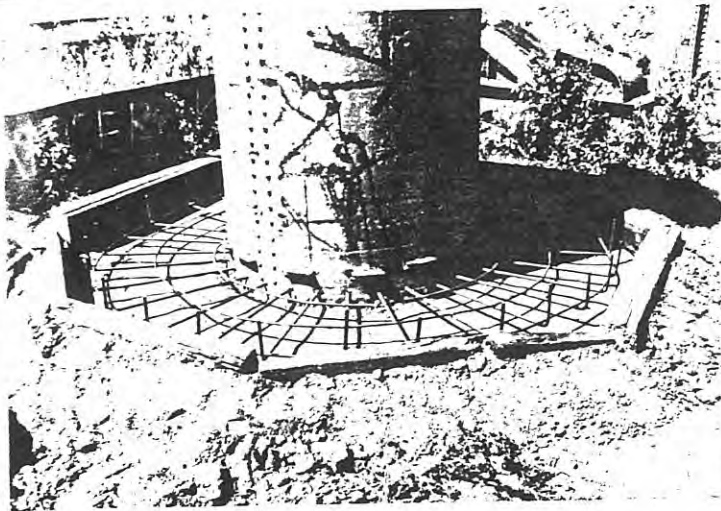


Strengthening the bearing capacities of the piers, Jan 1990

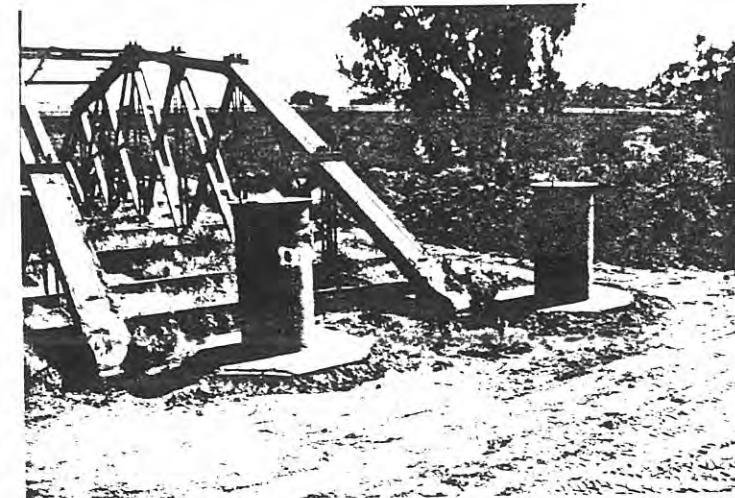
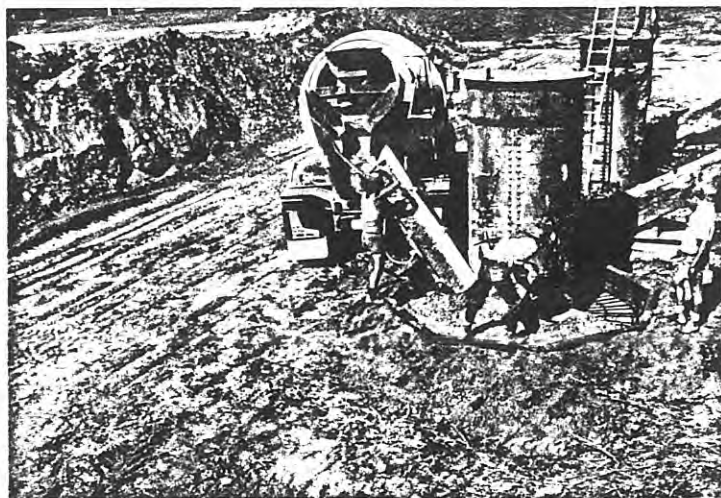


Stub beams welded to the northern piers

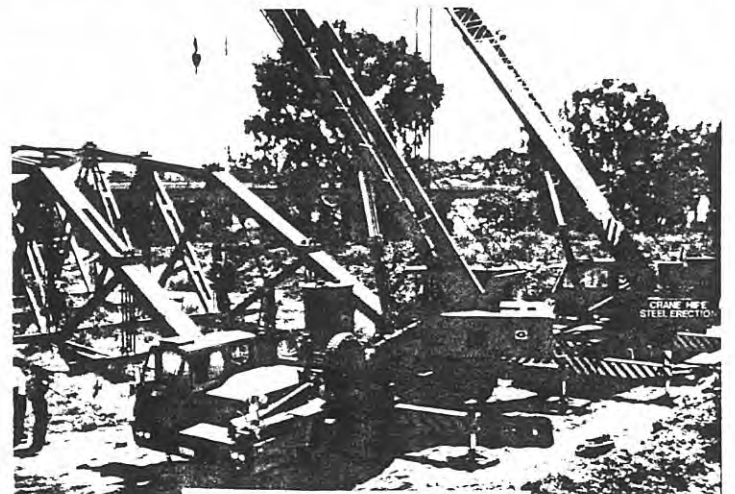
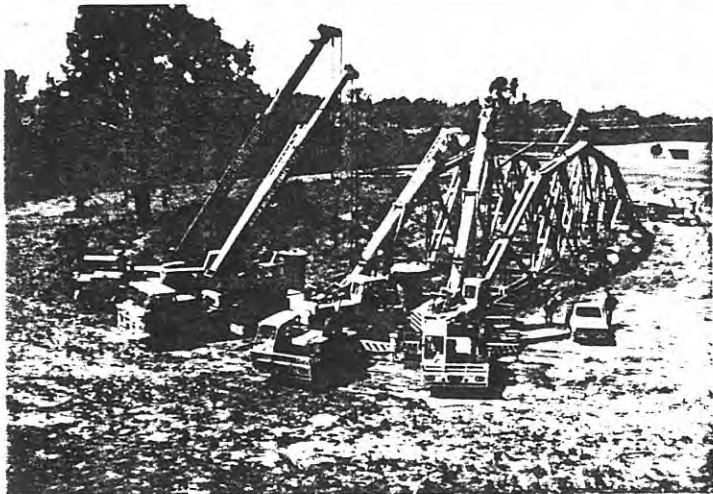
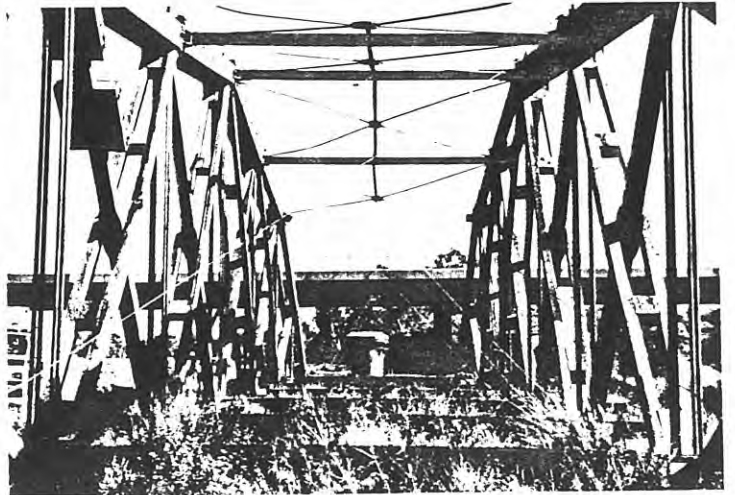
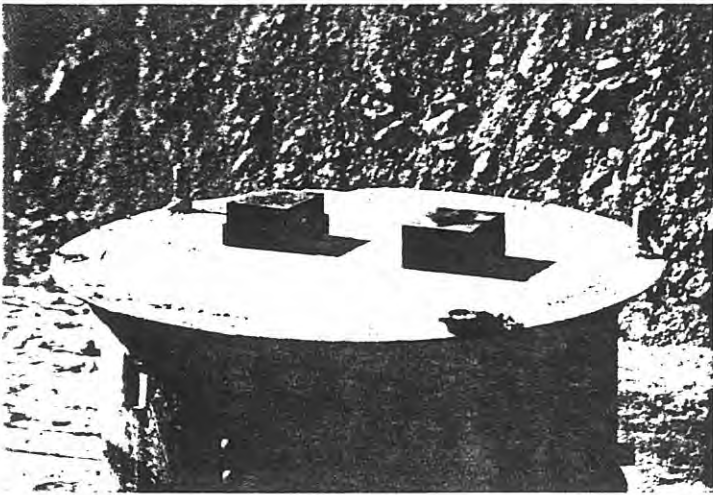




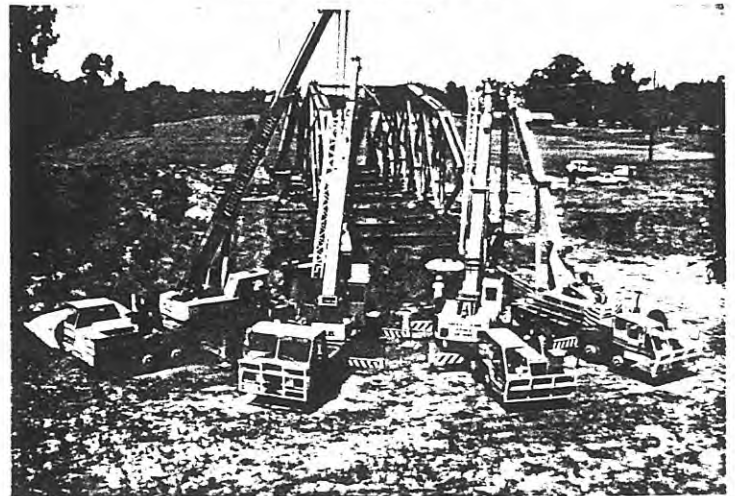
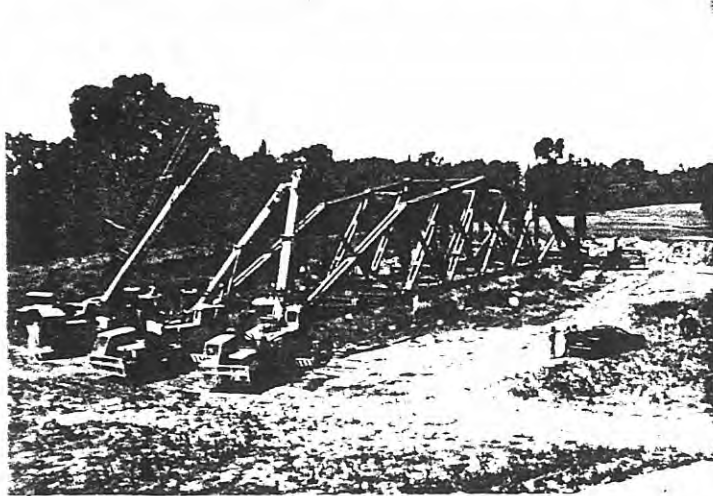
Reinforced concrete collars for the southern piers

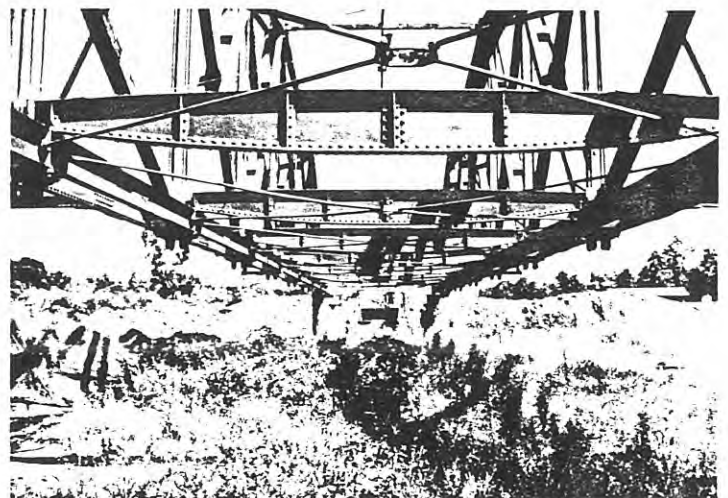
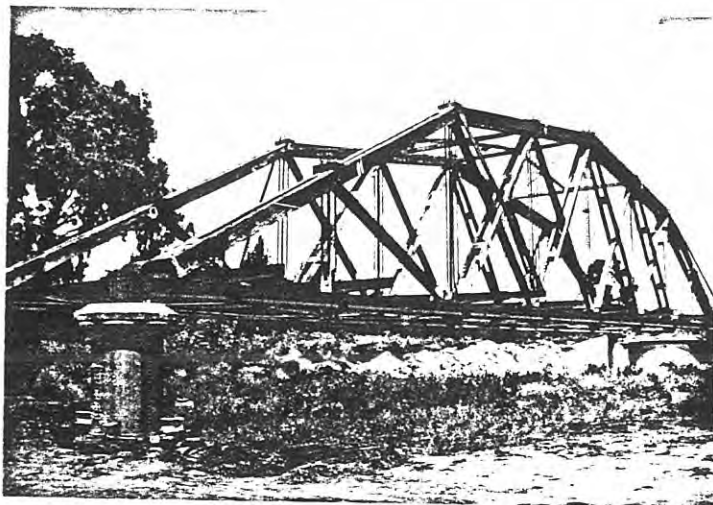
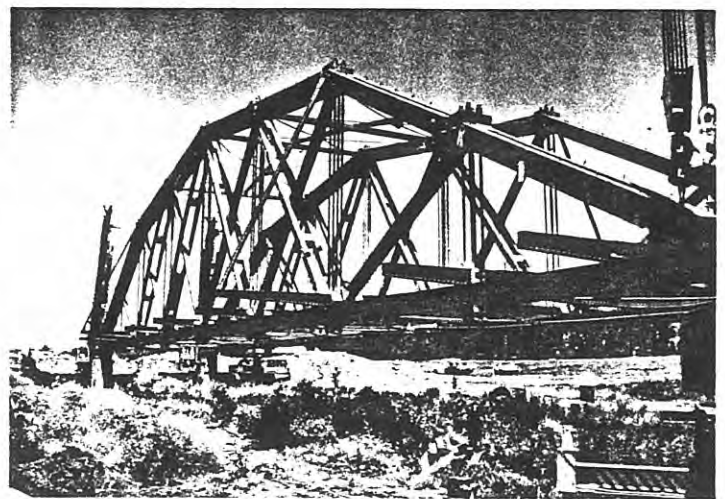
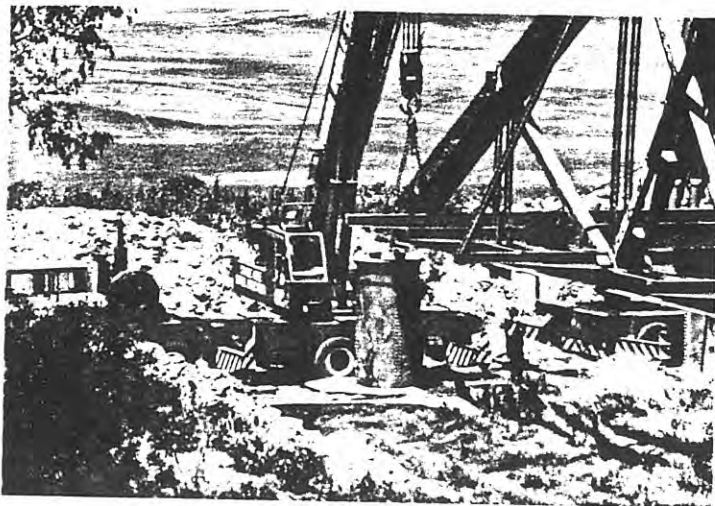
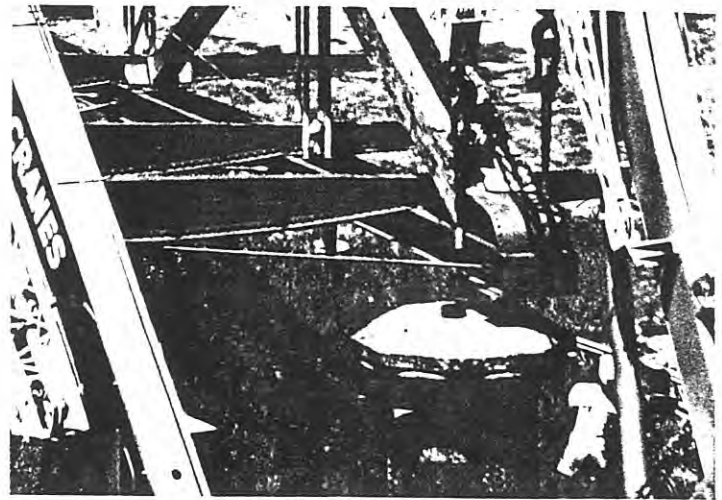
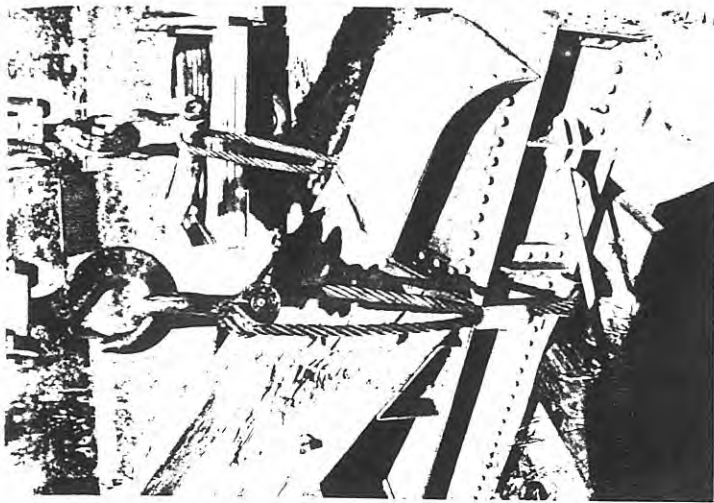




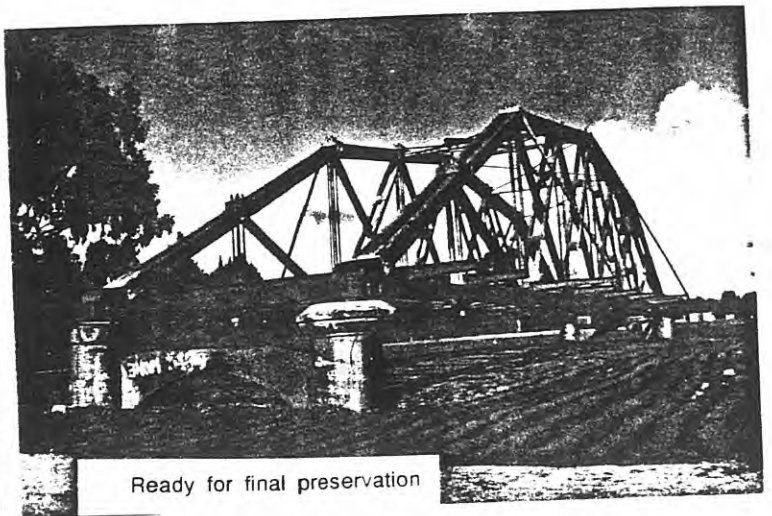
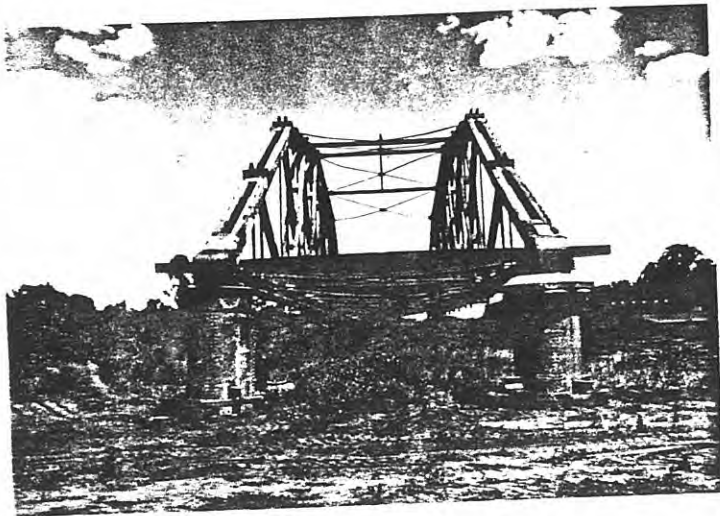


The big lift 14 February 1990

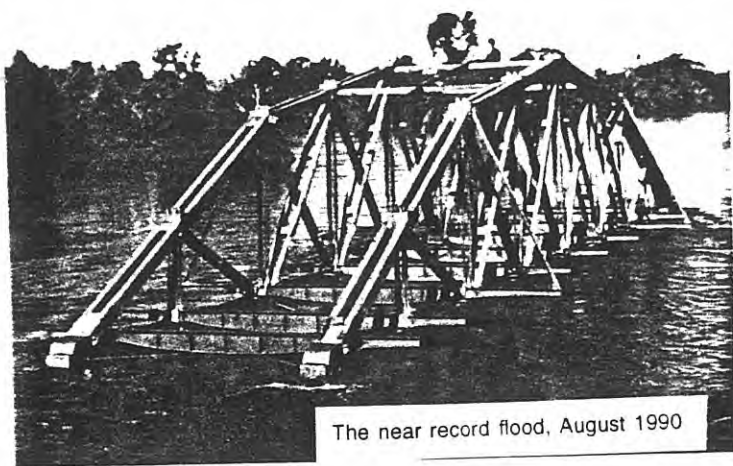




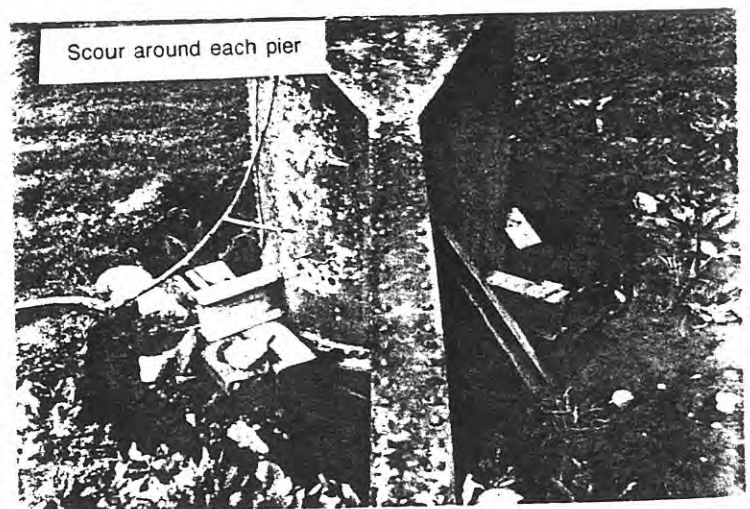
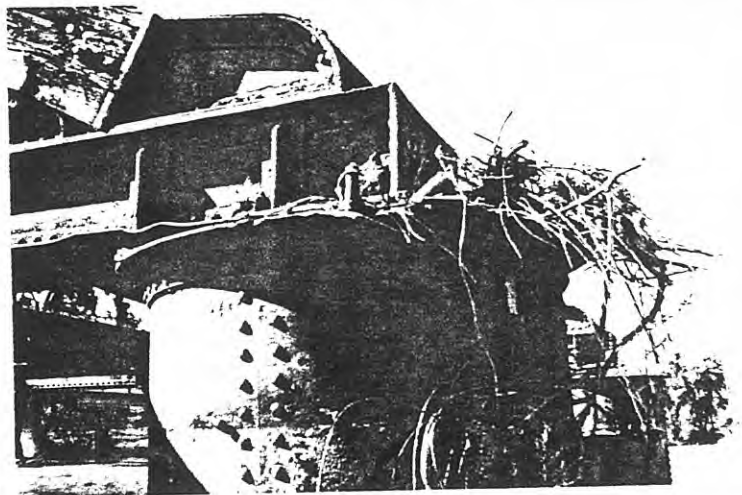




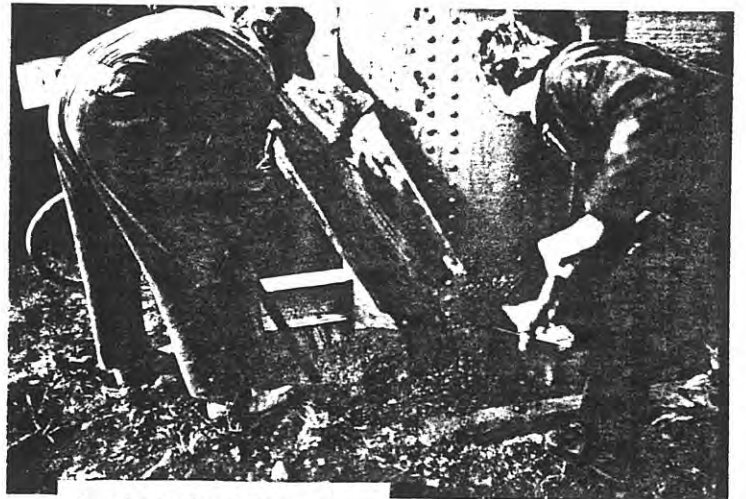
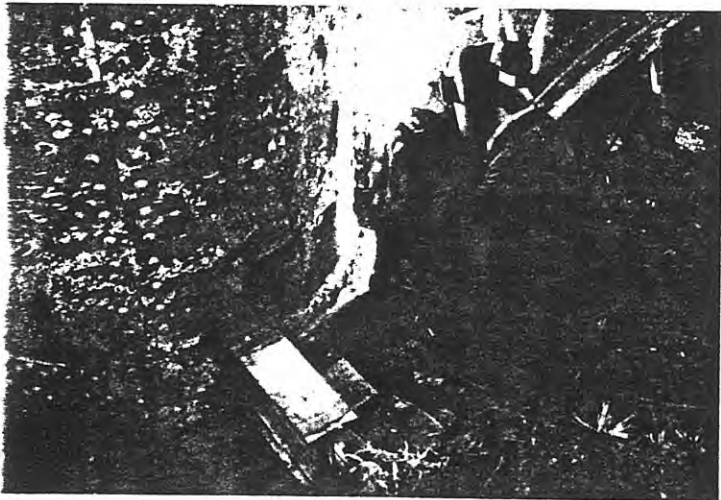
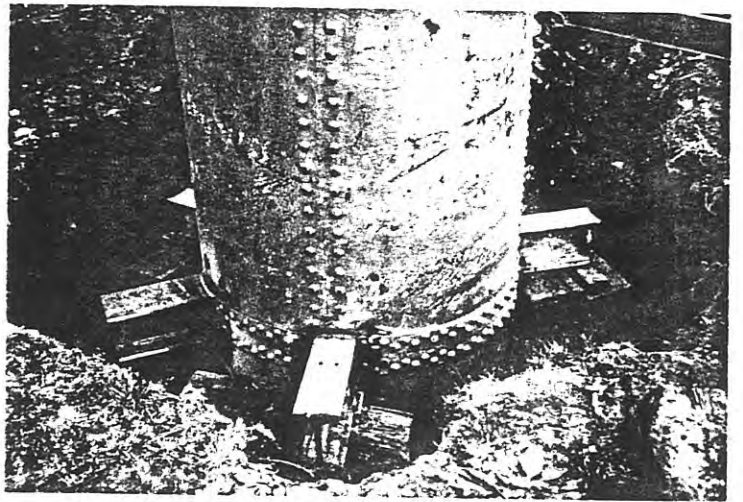
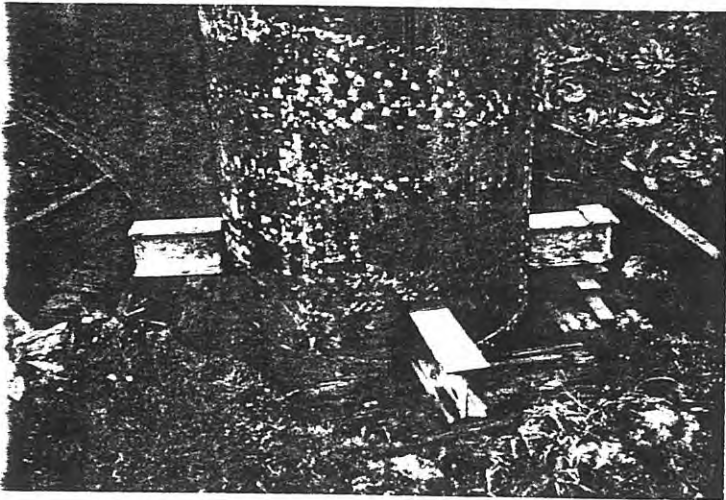
Ready for final preservation



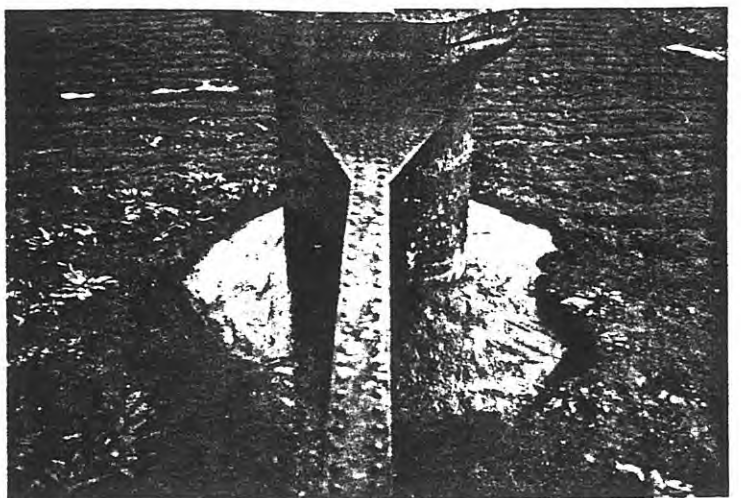
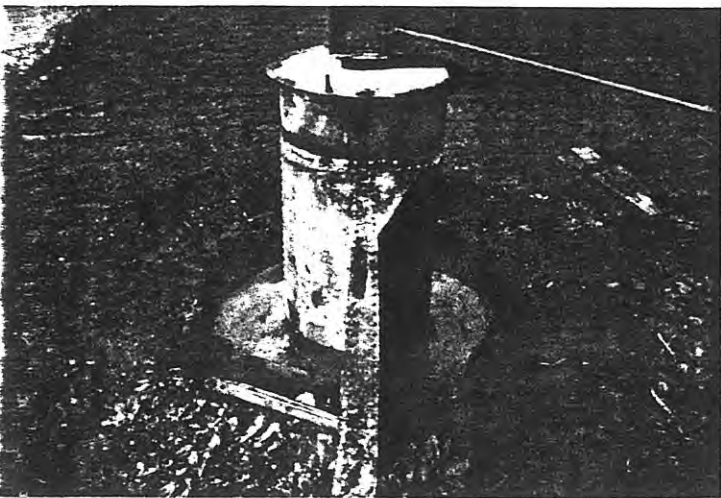
The near record flood, August 1990



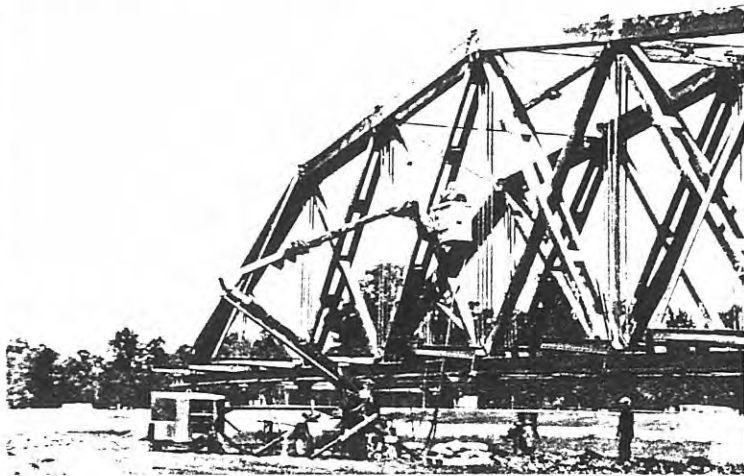
Scour around each pier



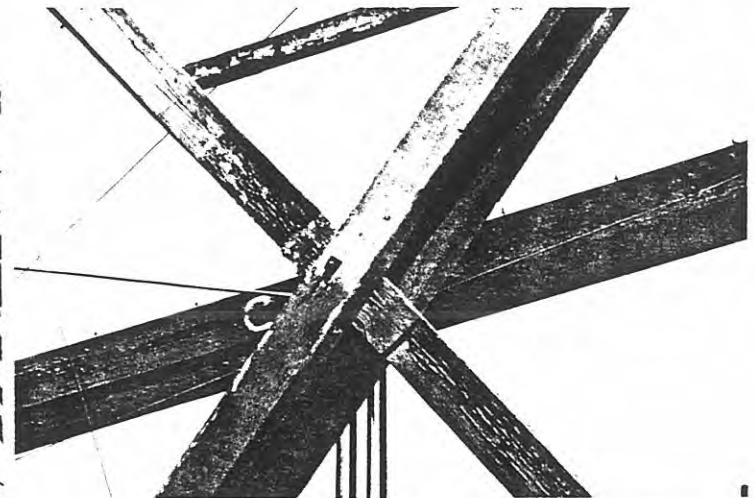
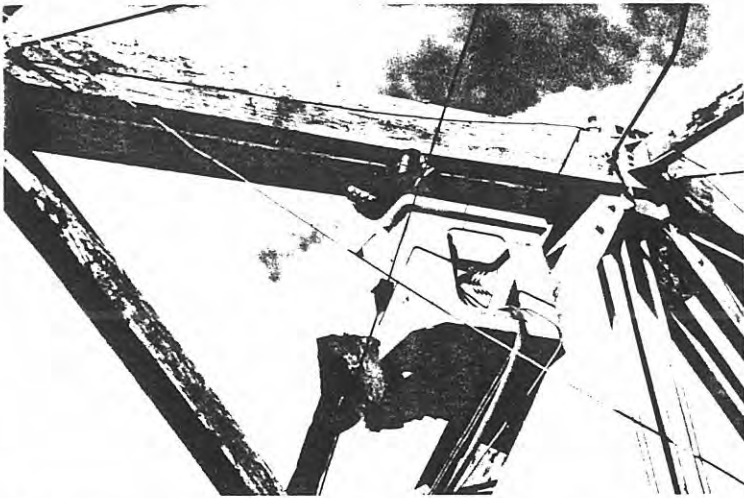
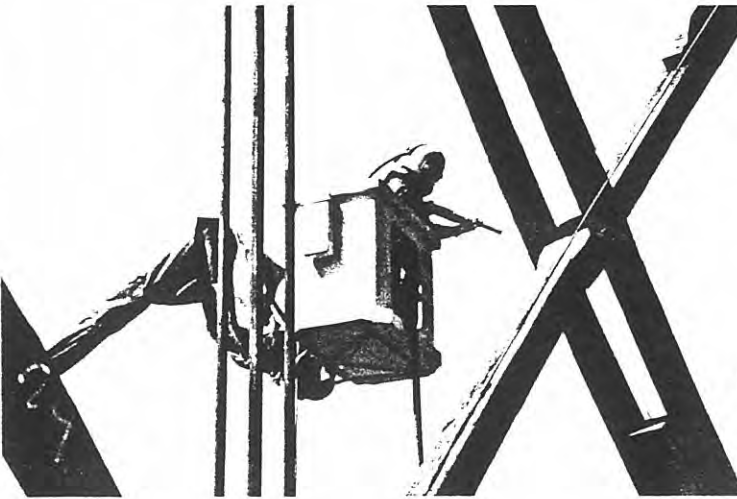
Repairs to the northern piers

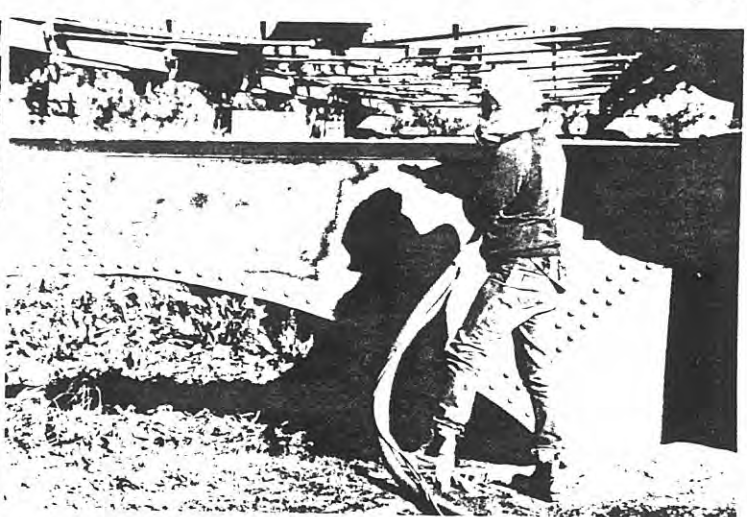
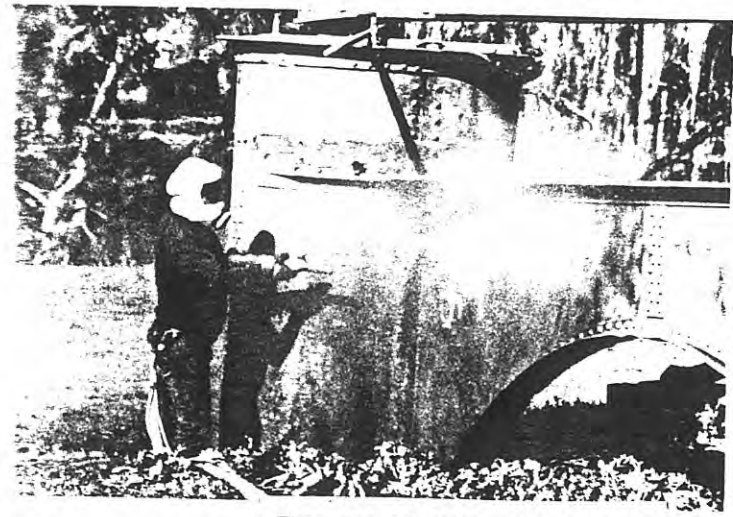
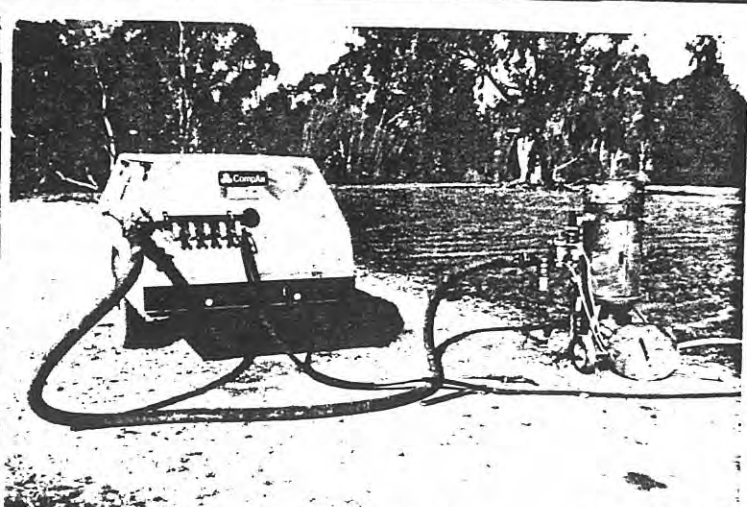
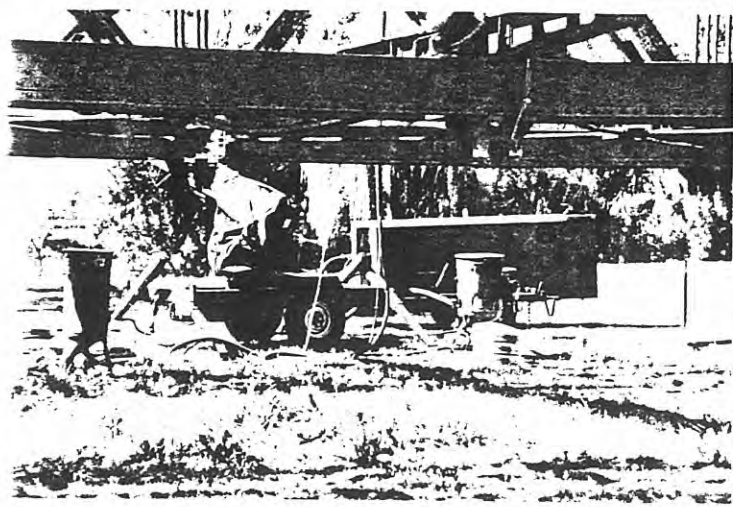




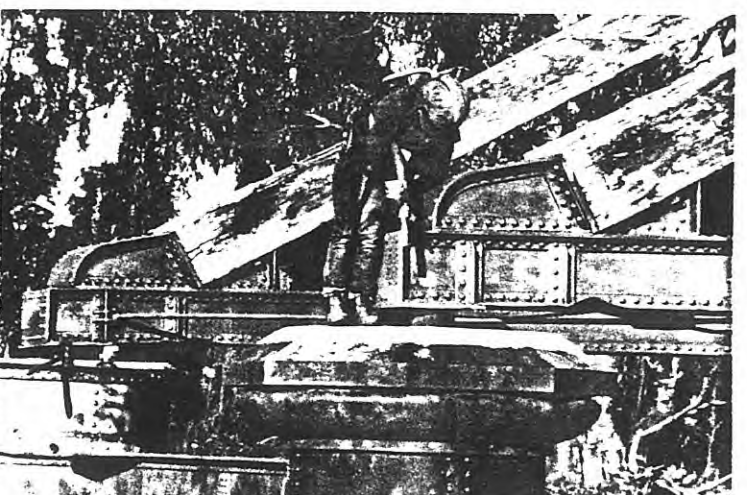
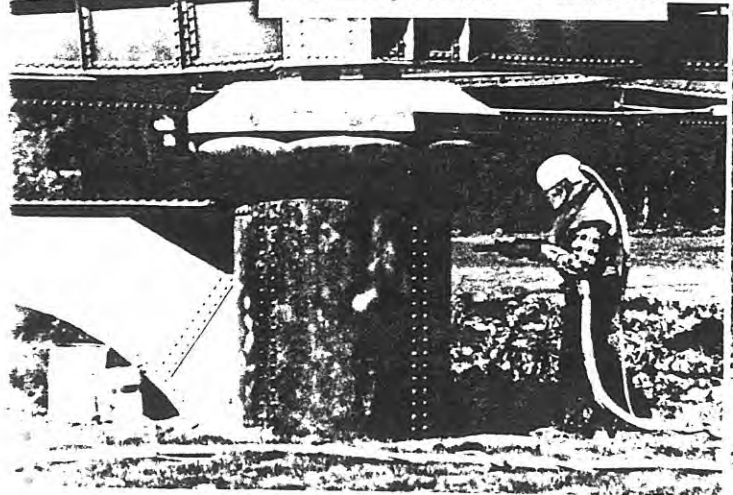


The RTA Dubbo gang grit blasted the timber

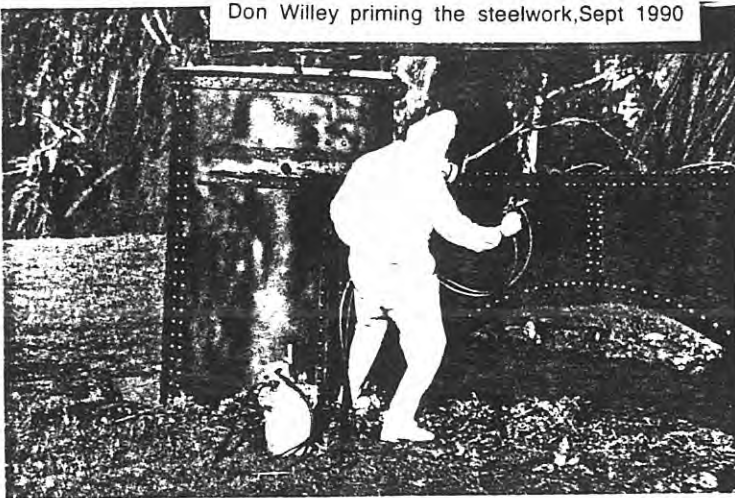
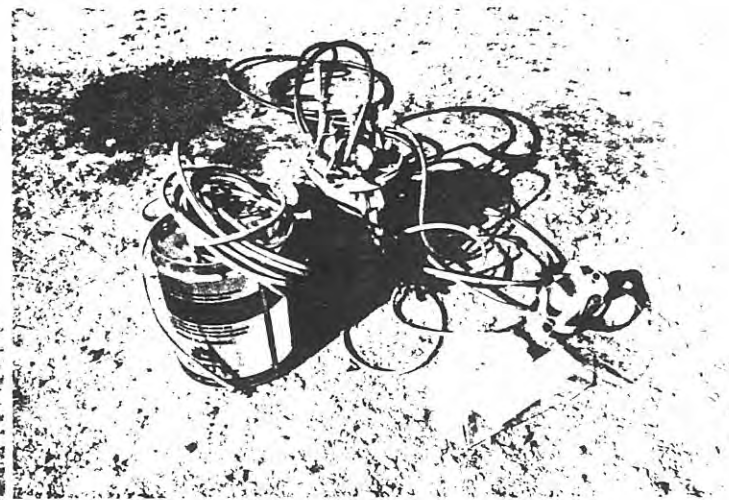
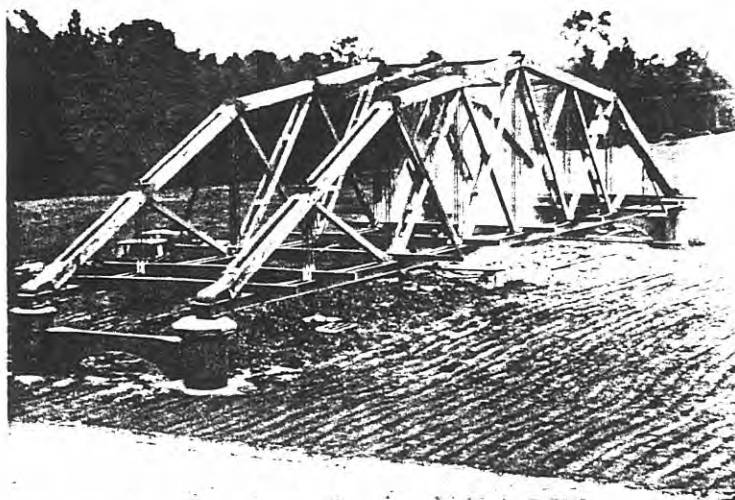
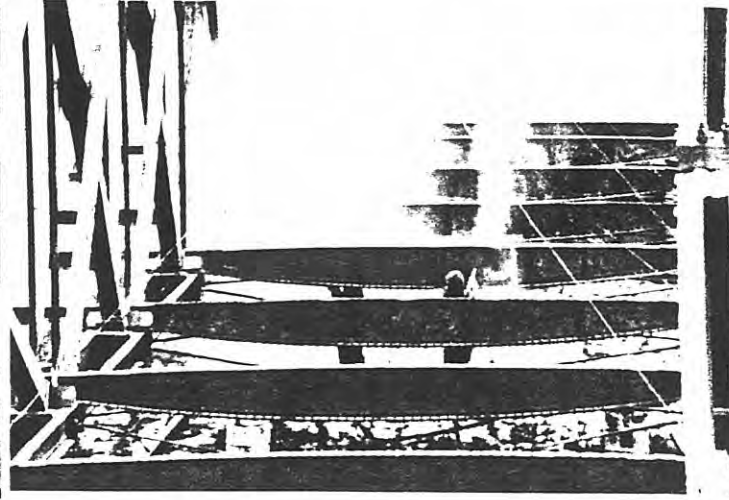
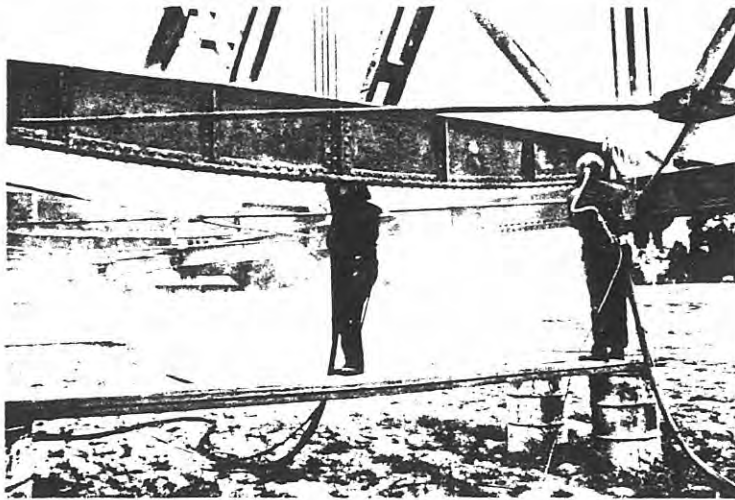




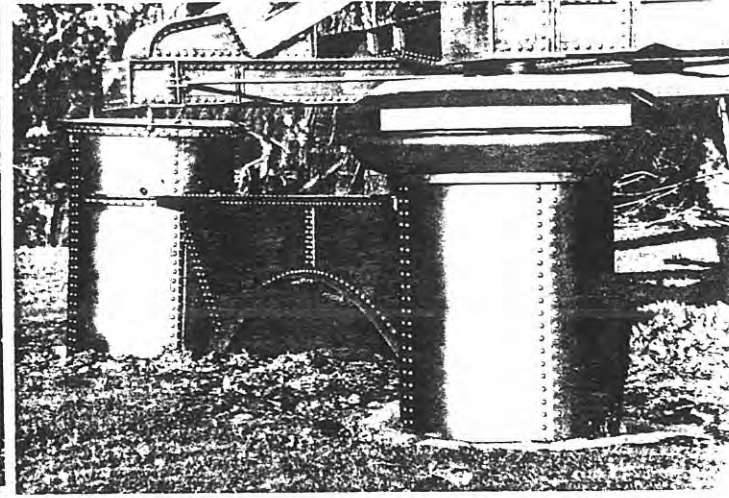
They also grit blasted the steelwork

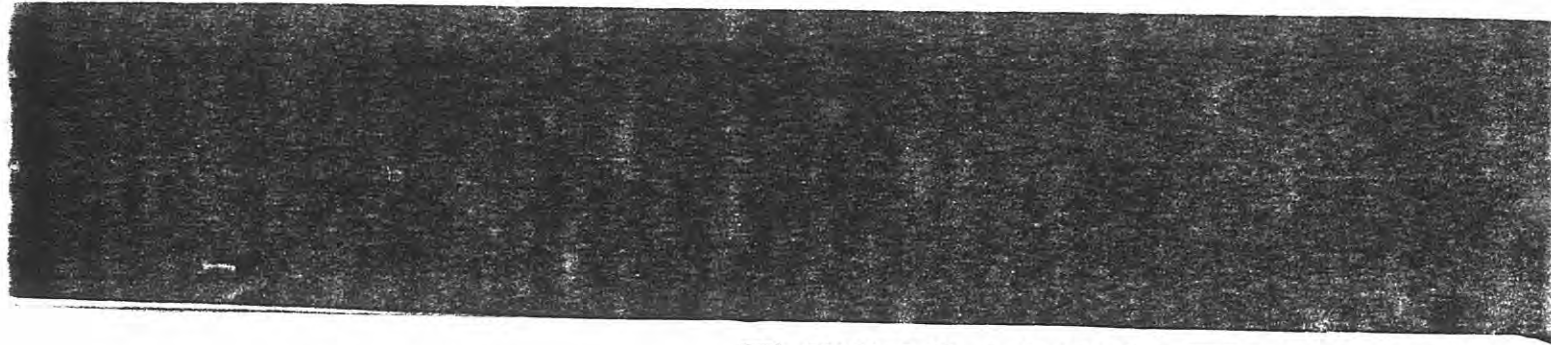




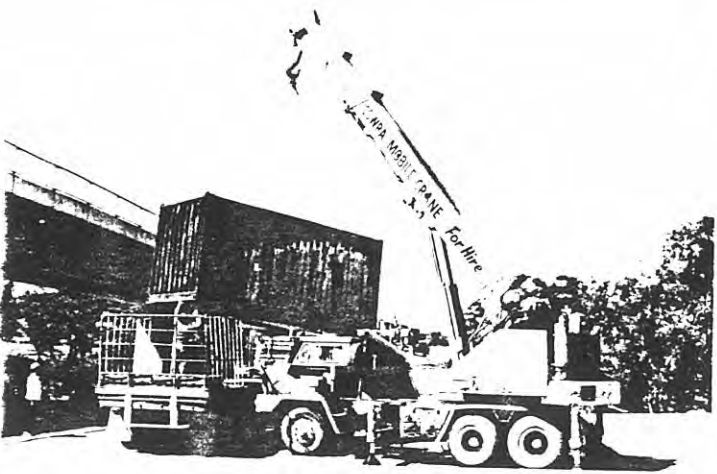


Don Willey priming the steelwork, Sept 1990

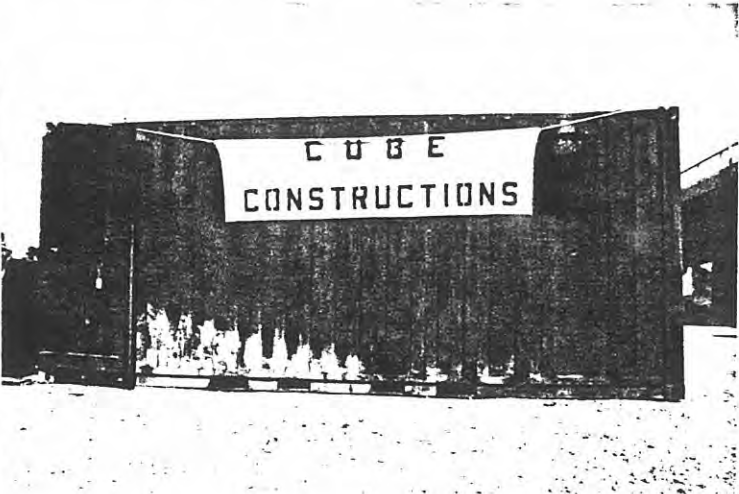
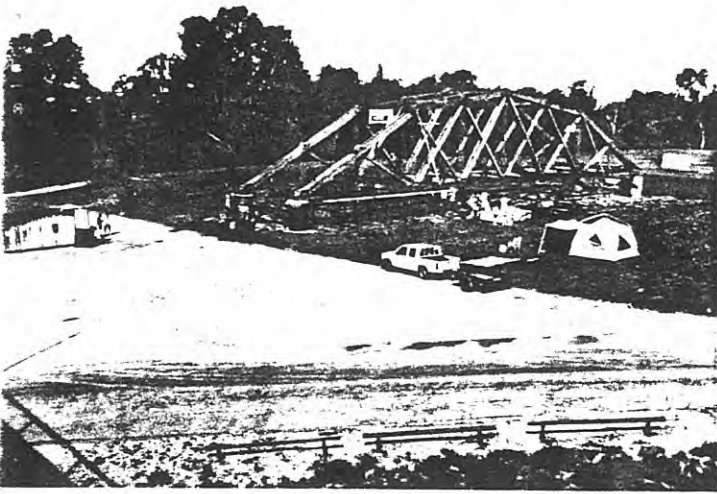




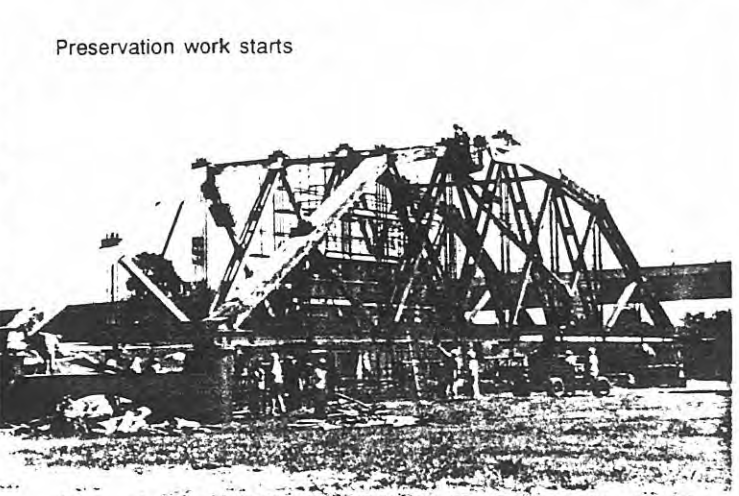
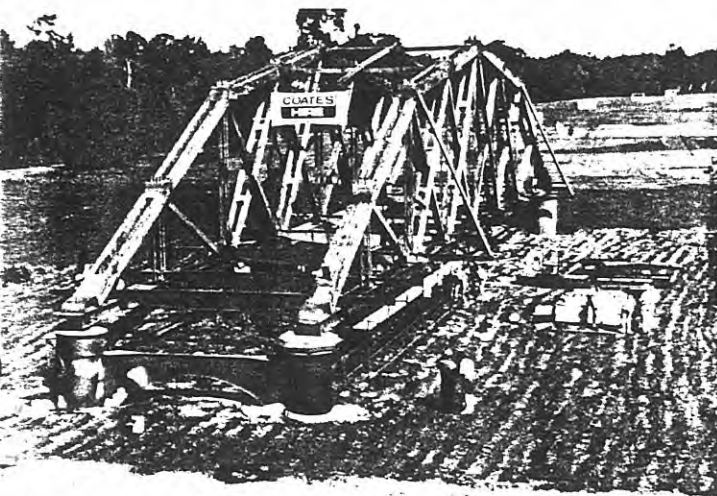
CONCAMP '90 - September 1990



The store and scaffolding arrive



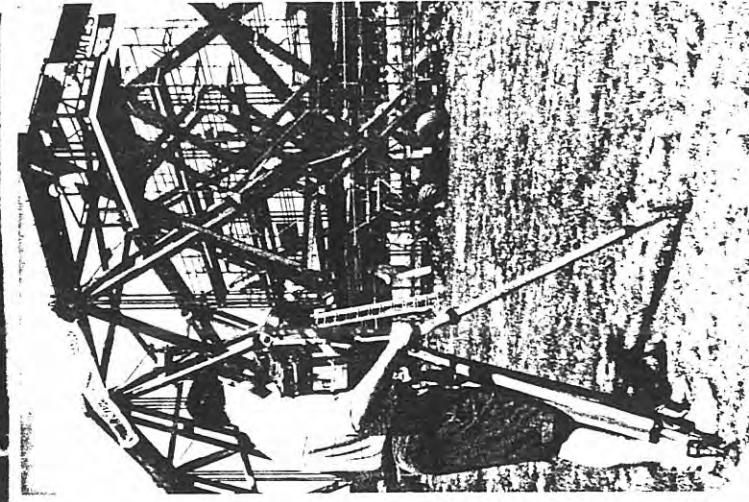
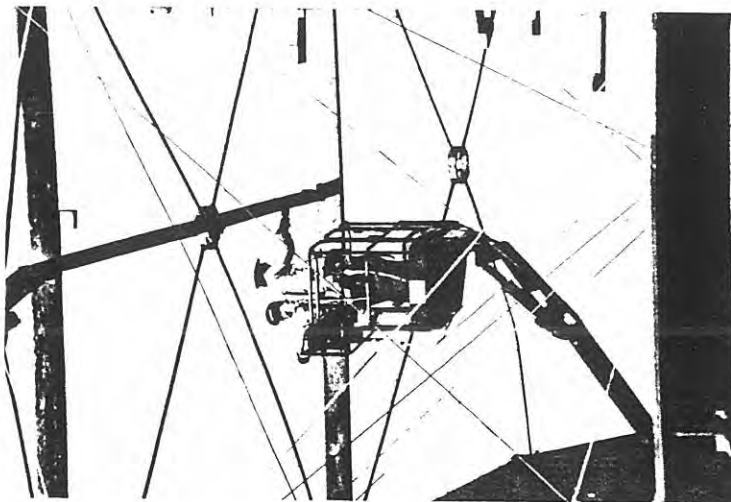
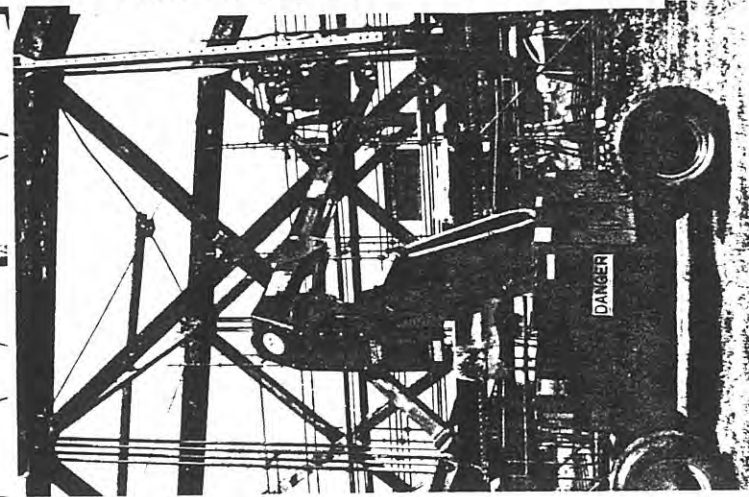
Preservation work starts

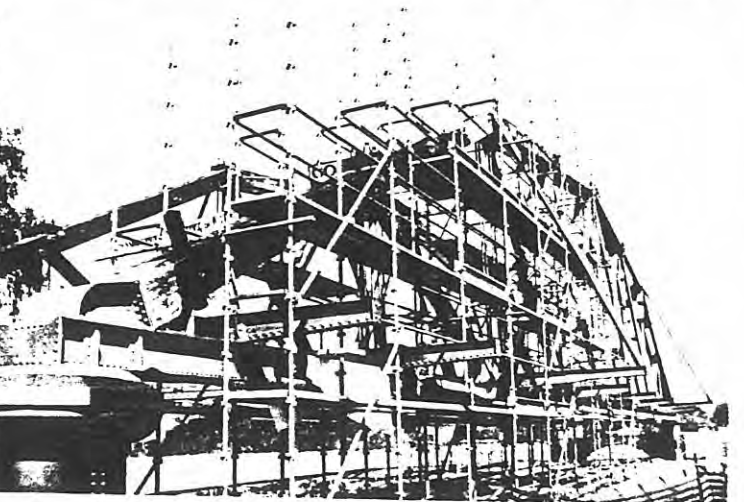
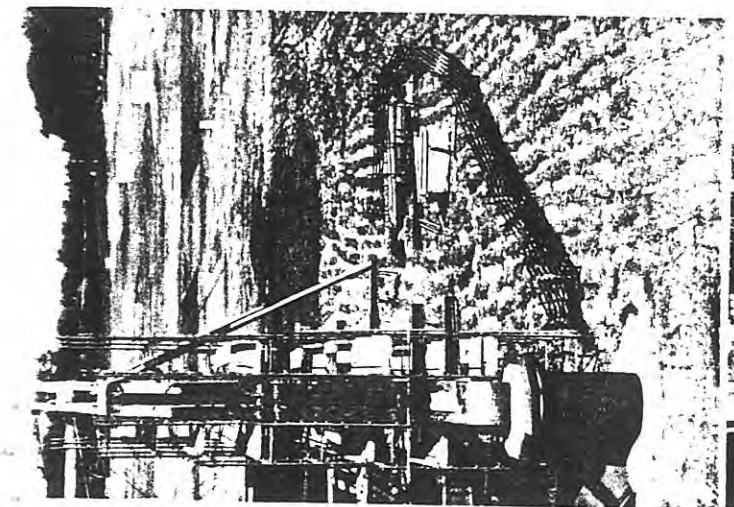
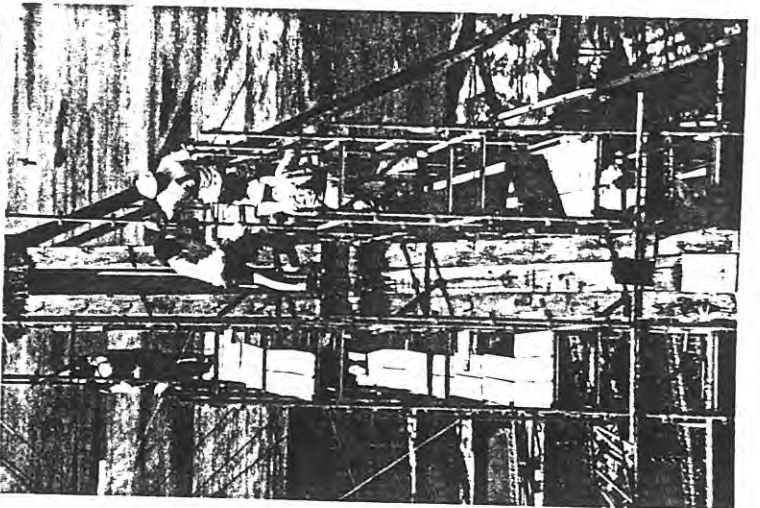
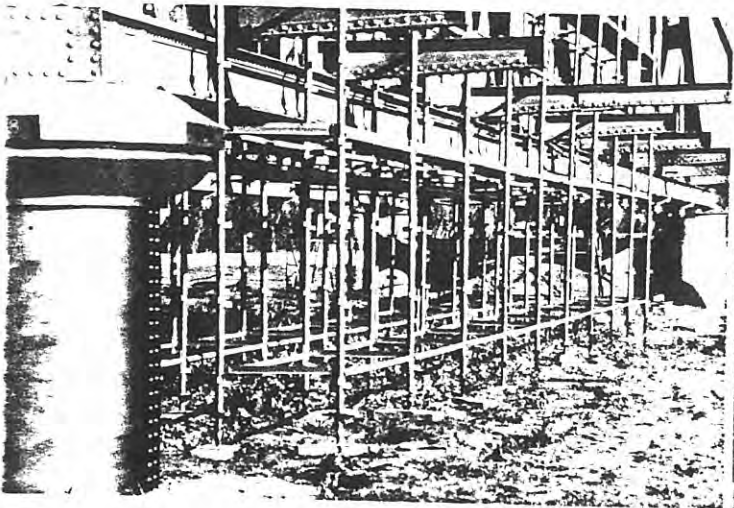
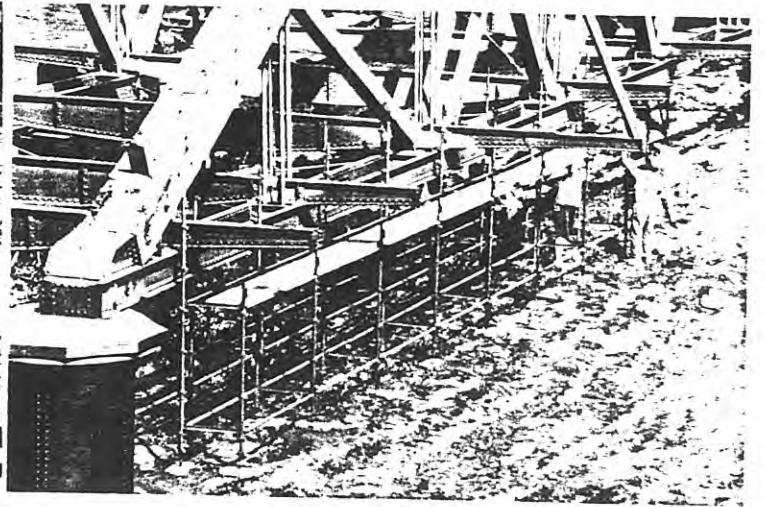
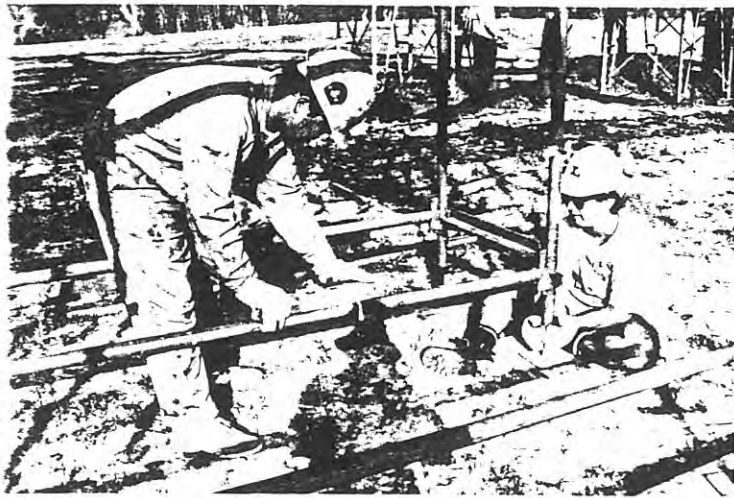




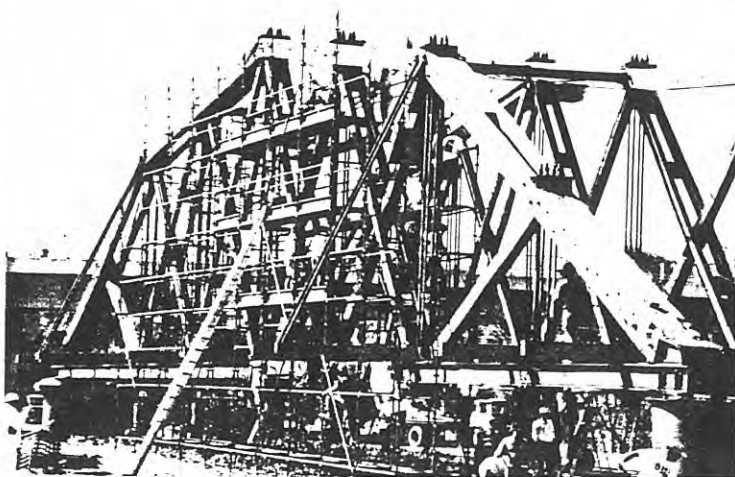
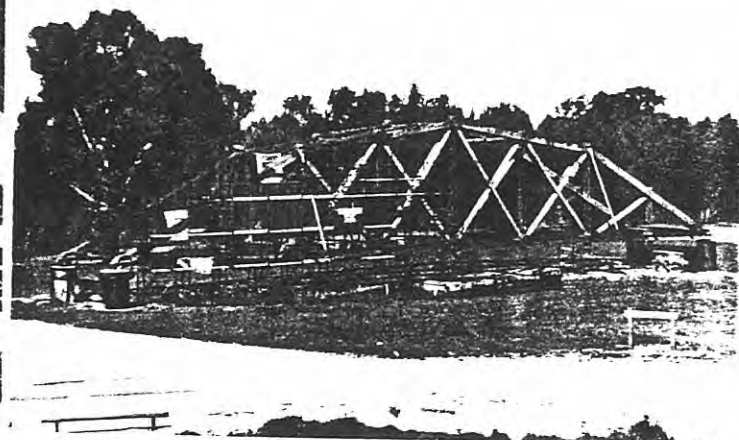
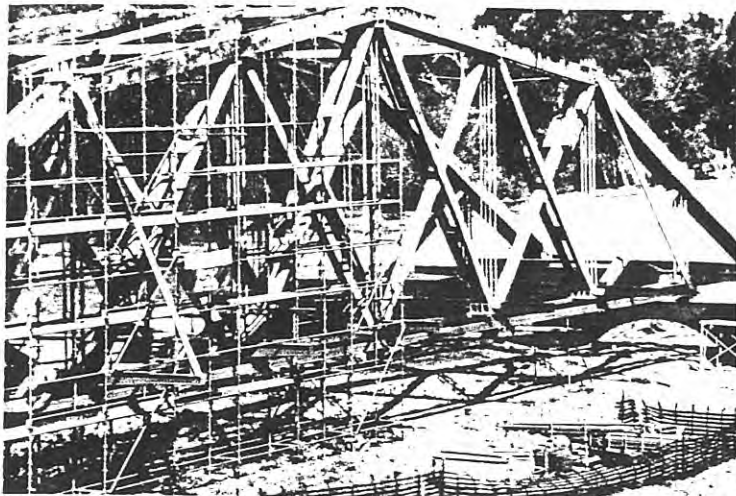


This student company used mechanical equipment

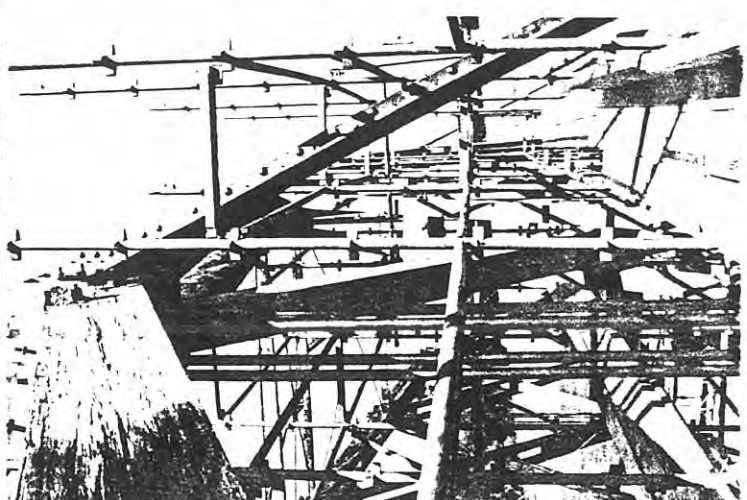
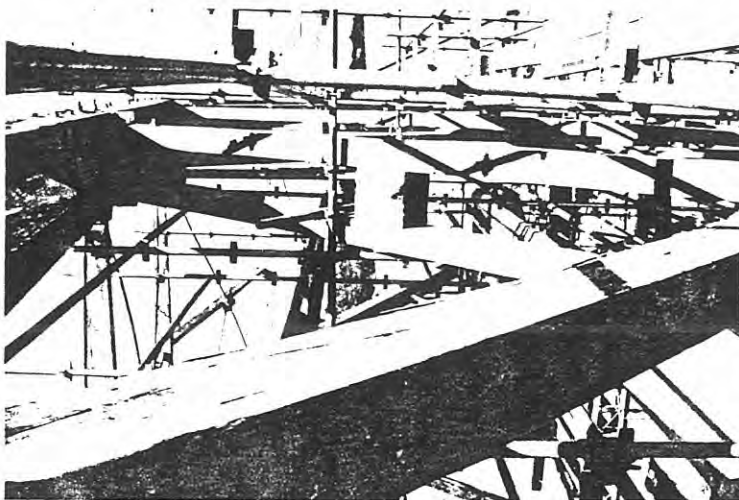


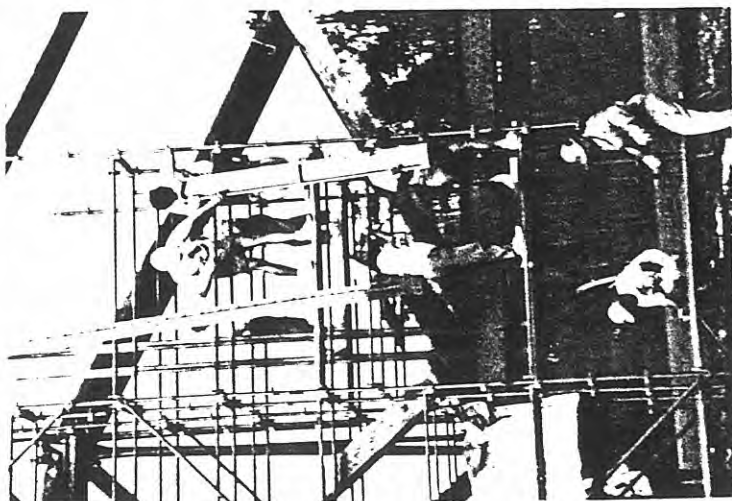
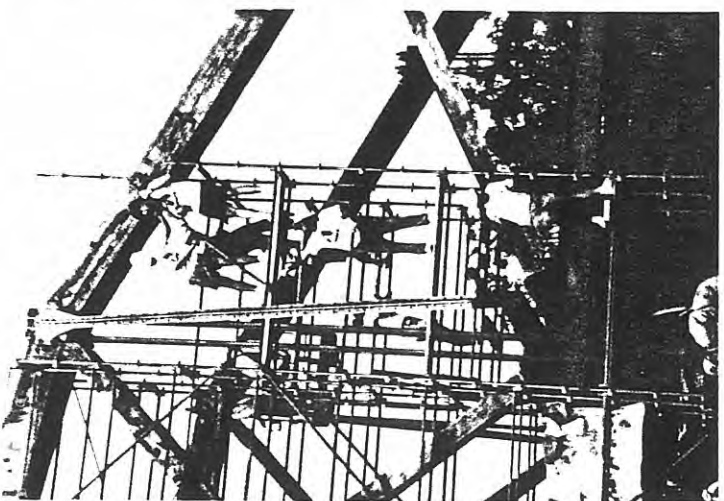
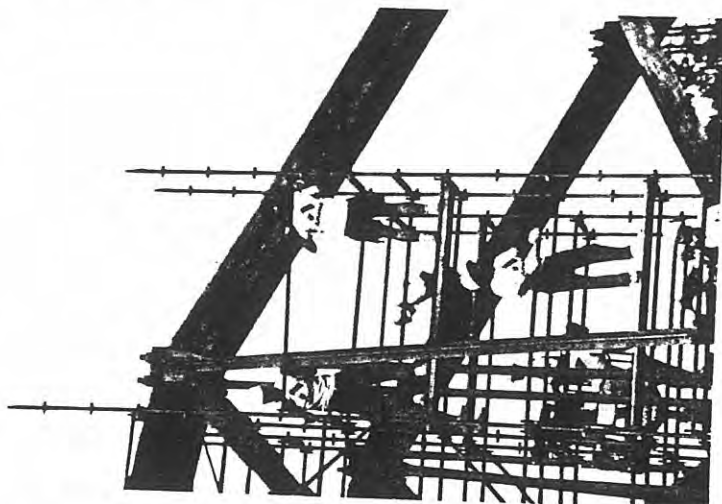
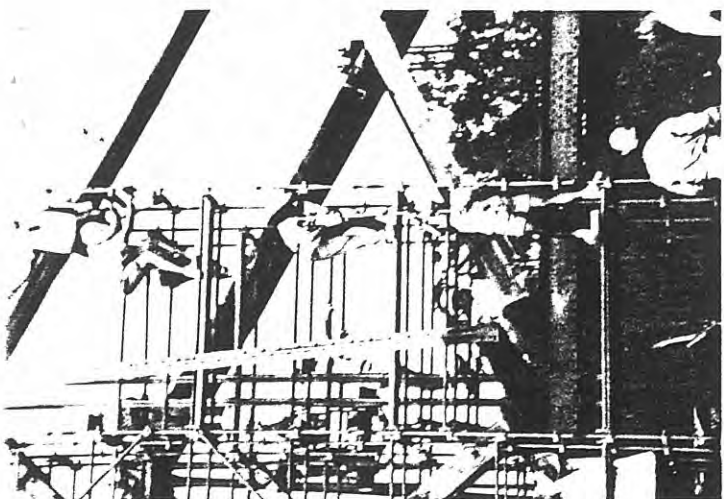
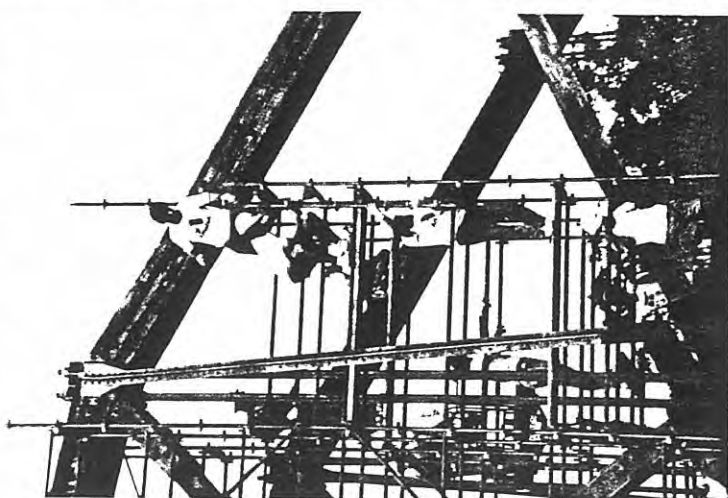
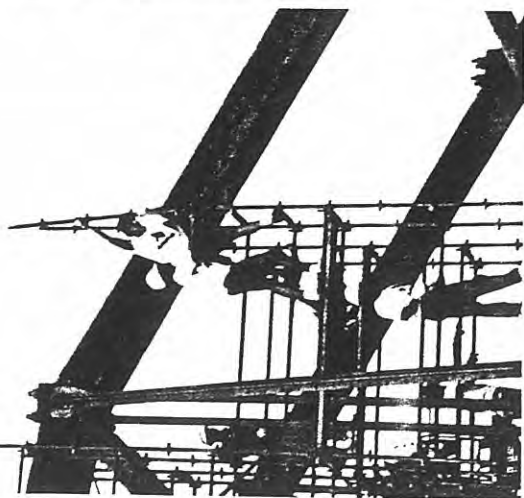




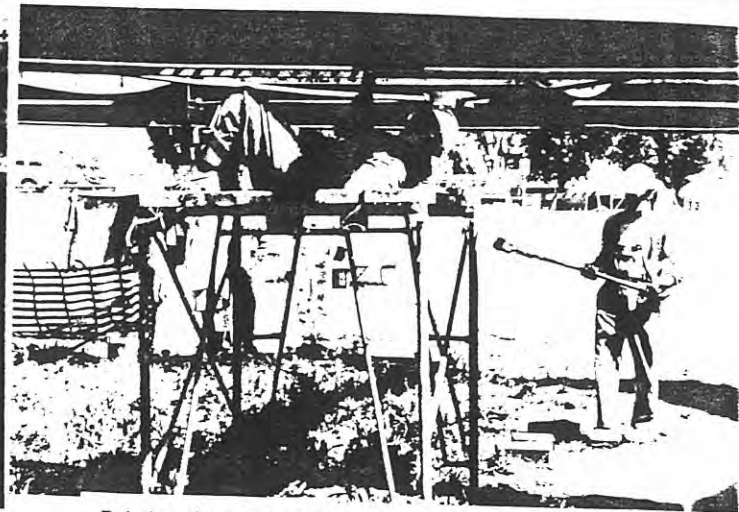
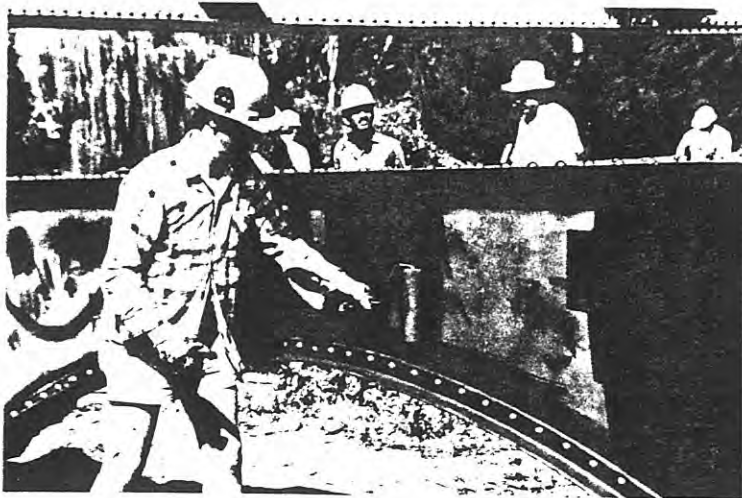


The rival company used scaffolding

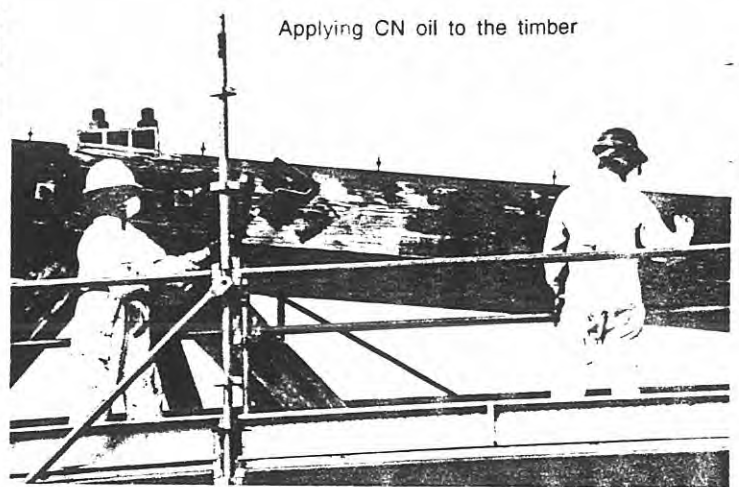
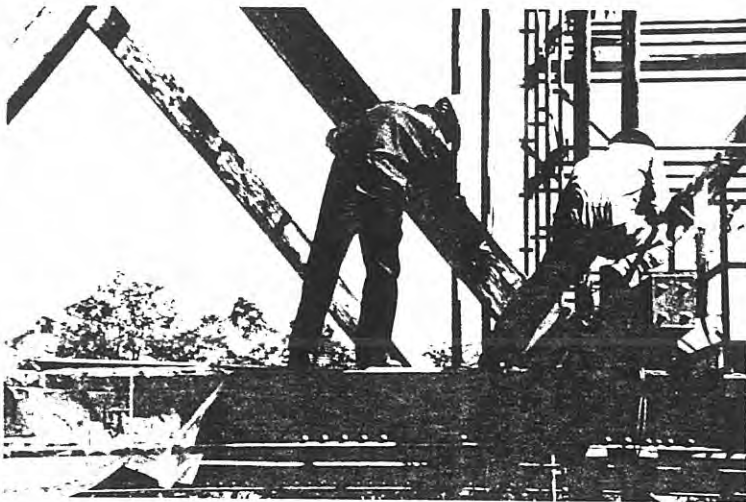
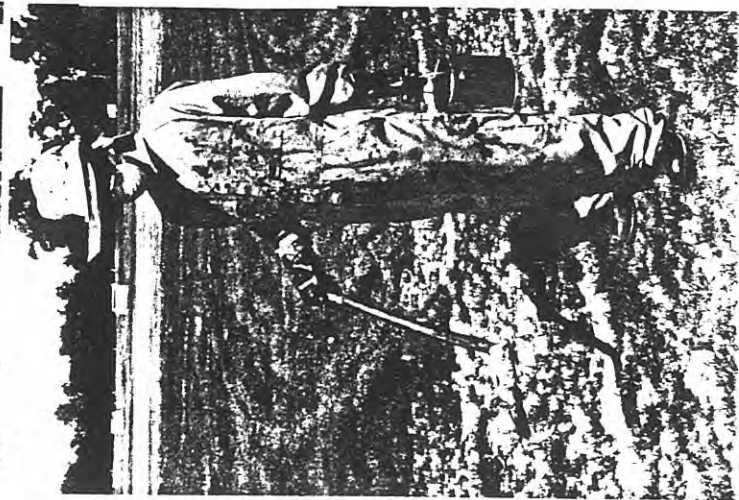
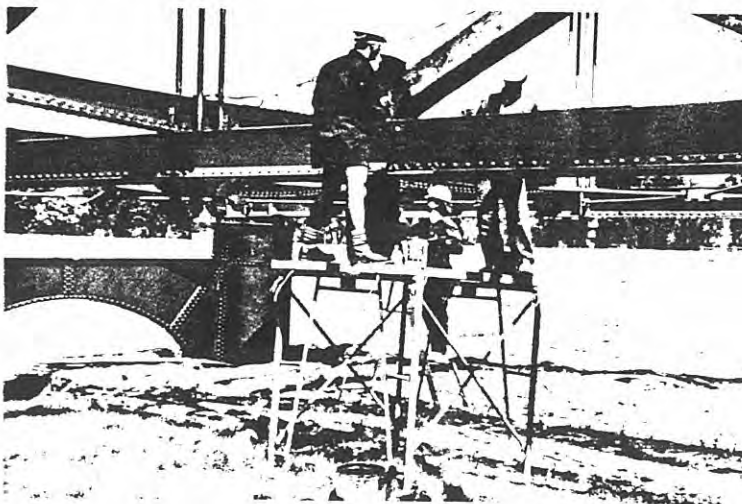






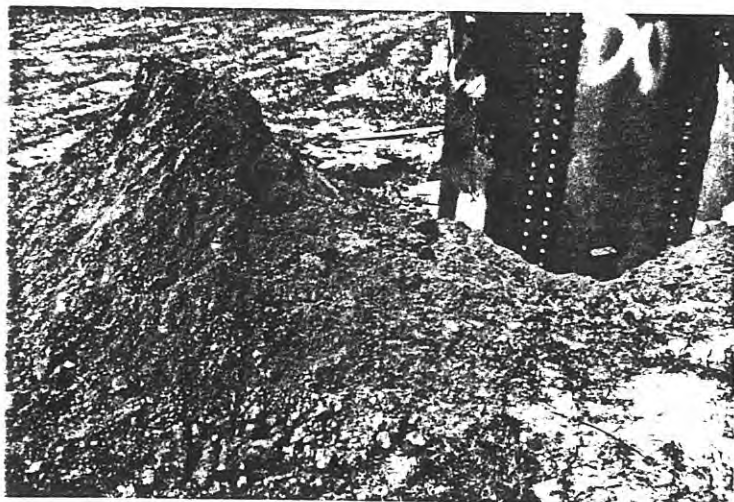
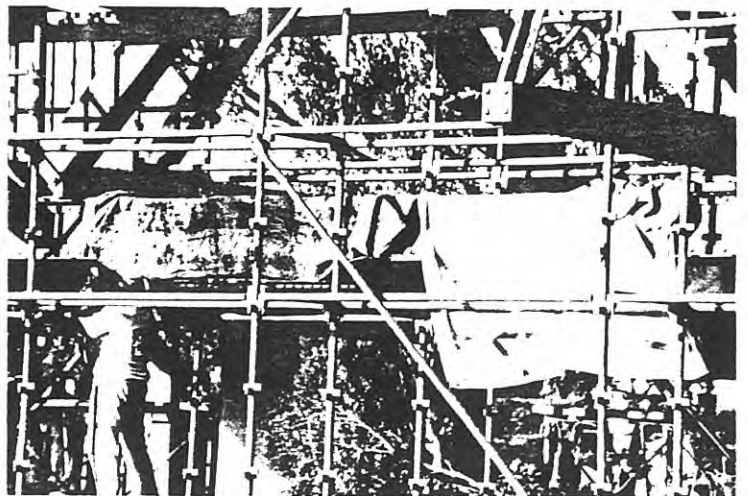
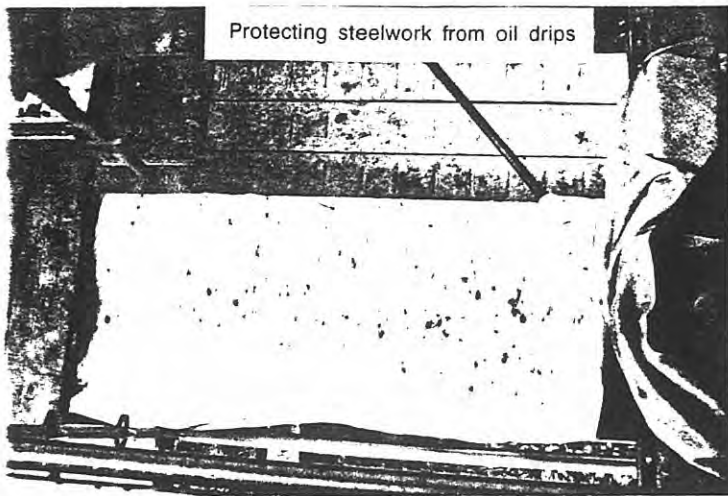


Painting the steelwork

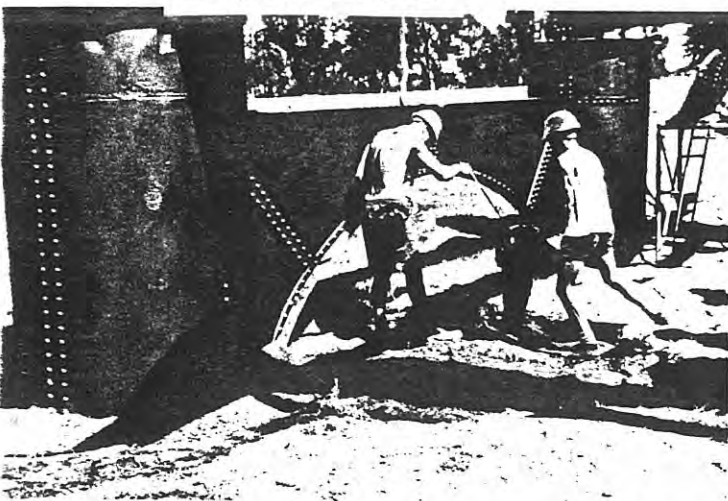
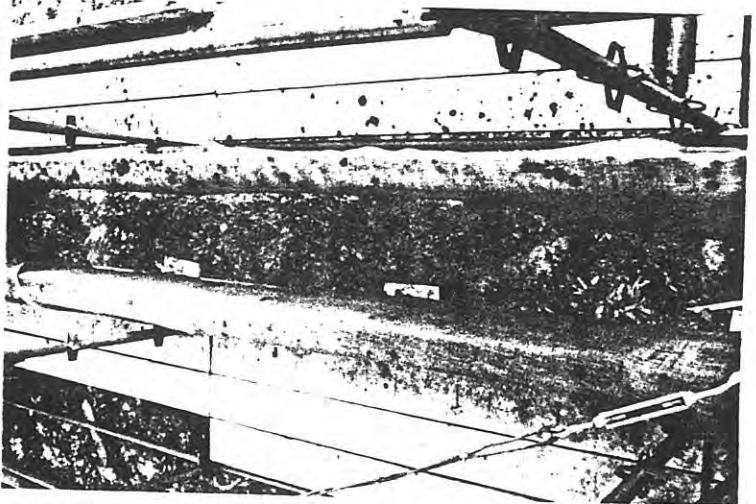


Applying CN oil to the timber

Protecting steelwork from oil drips

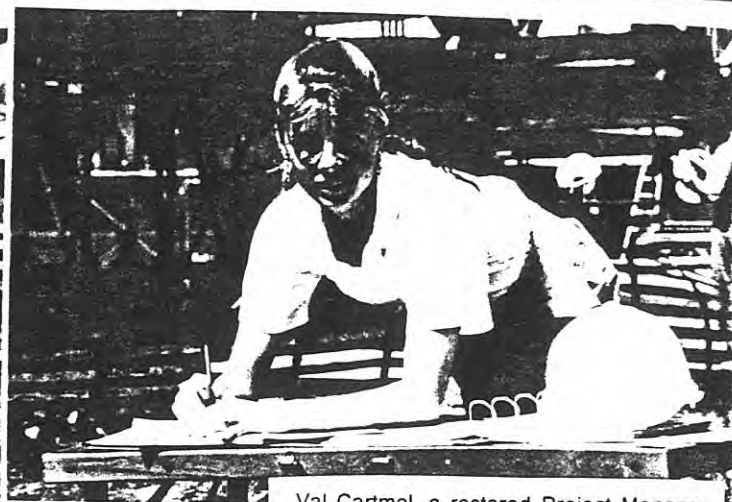
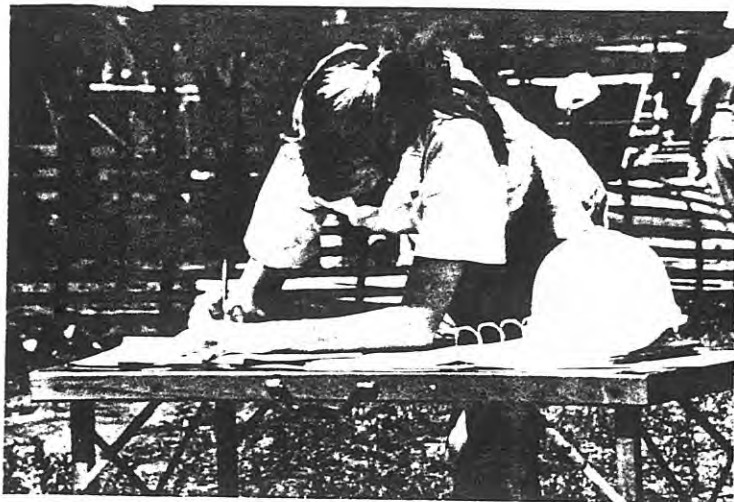


Filling-in the flood scours

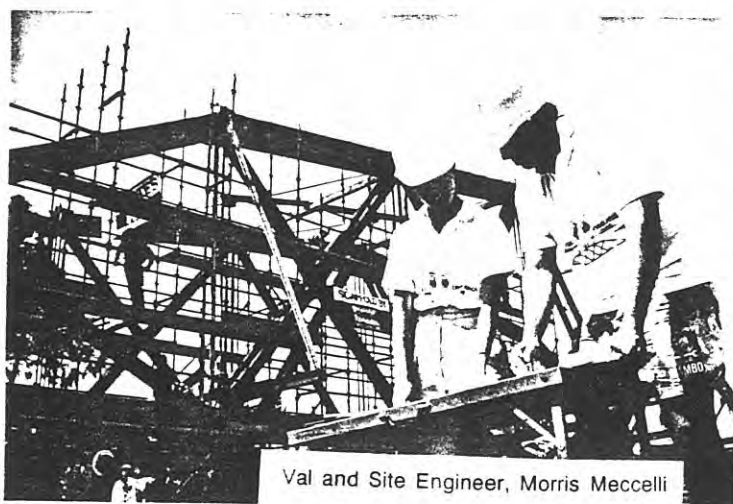


UNSW supervisors George Nawar and Jon O'Brien

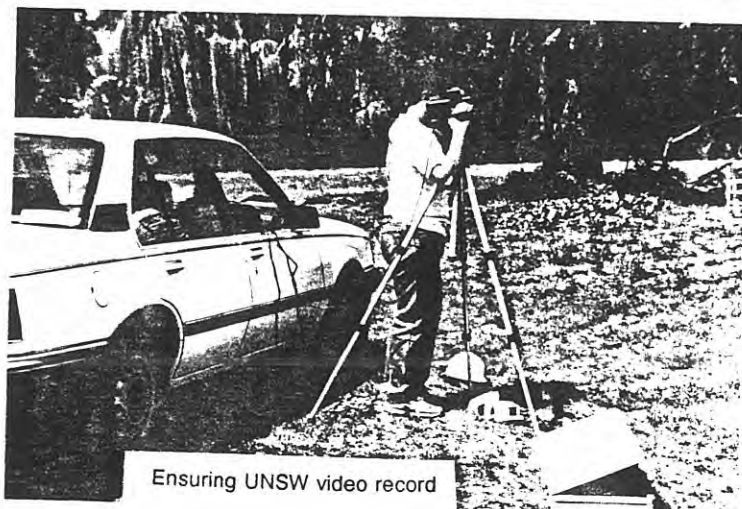
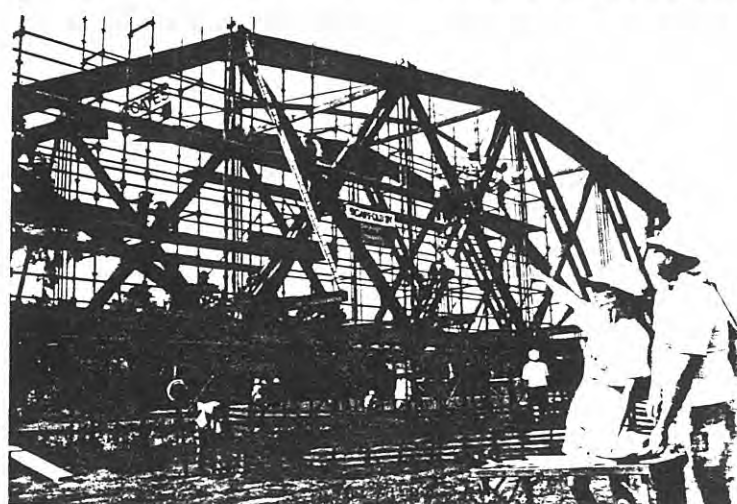




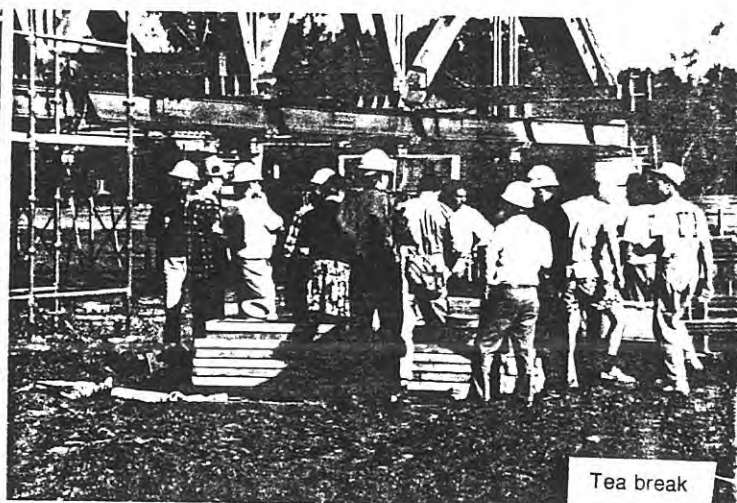
Val Cartmel, a rostered Project Manager



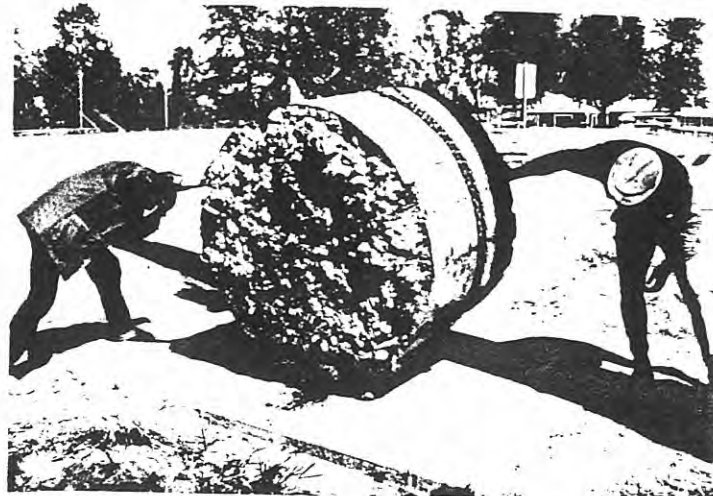
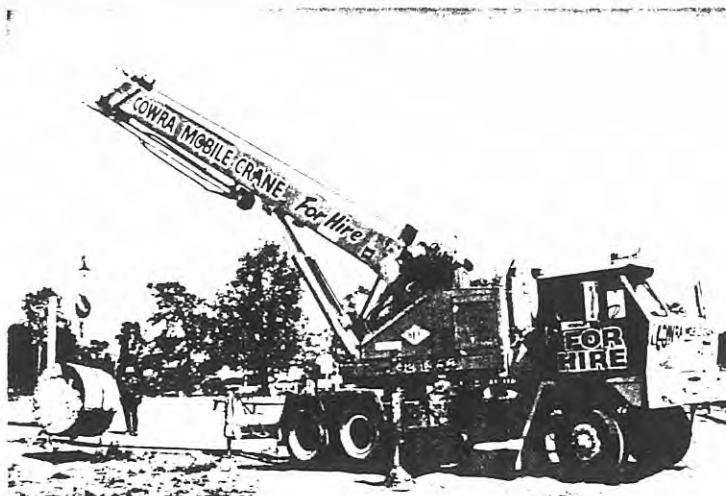
Val and Site Engineer, Morris Meccelli



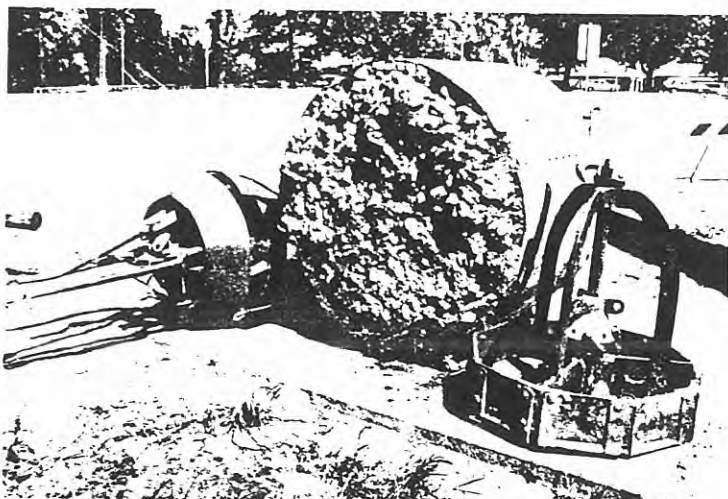
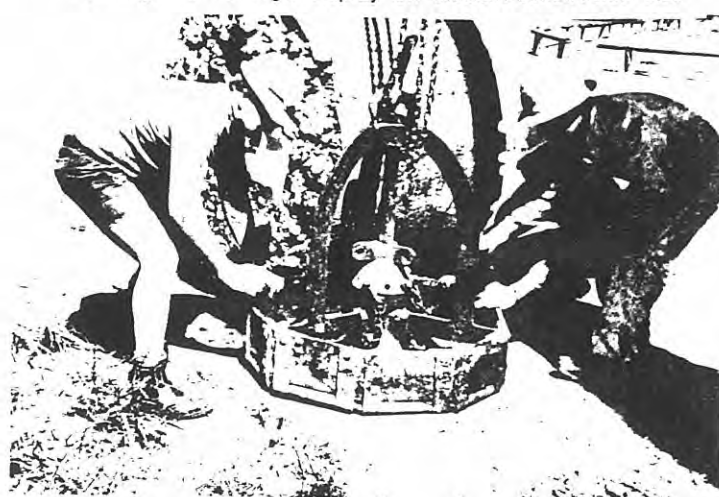
Ensuring UNSW video record



Tea break



Forming the heritage display on student-constructed slab



## HISTORIC ENGINEERING MARKER

### COWRA BRIDGE TRUSS

THIS SPAN WAS ONE OF THE THREE OF THE COWRA BRIDGE BUILT ACROSS THE LACHLAN RIVER IN 1893 TO A DESIGN BY J. A. McDONALD. IT WAS THE FIRST COMPOSITE TIMBER/IRON TRUSS IN NEW SOUTH WALES AND WAS THE LARGEST OF ITS TYPE IN AUSTRALIA. IT CARRIED THE BUSY NORTH-SOUTH INLAND ROAD TRAFFIC FOR 93 YEARS. ITS PRESERVATION WAS A JOINT PROJECT OF THE COWRA SHIRE COUNCIL AND THE UNIVERSITY OF NEW SOUTH WALES DURING 1989-90.

DEDICATED BY  
THE INSTITUTION OF ENGINEERS, AUSTRALIA, 1990.



eat free  
read sold  
here

feel like something else?

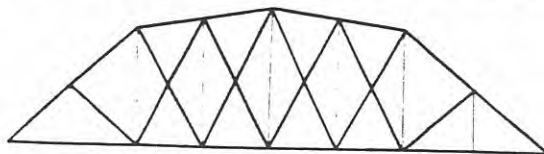


OST



Advising the town

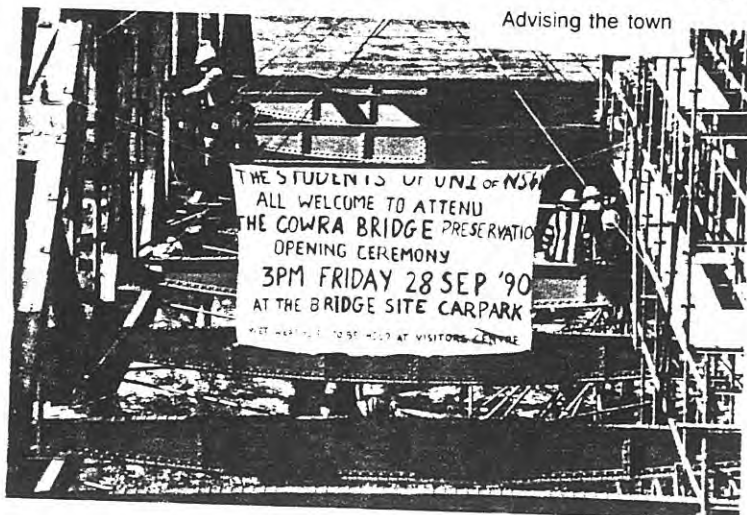
# COWRA BRIDGE PRESERVATION



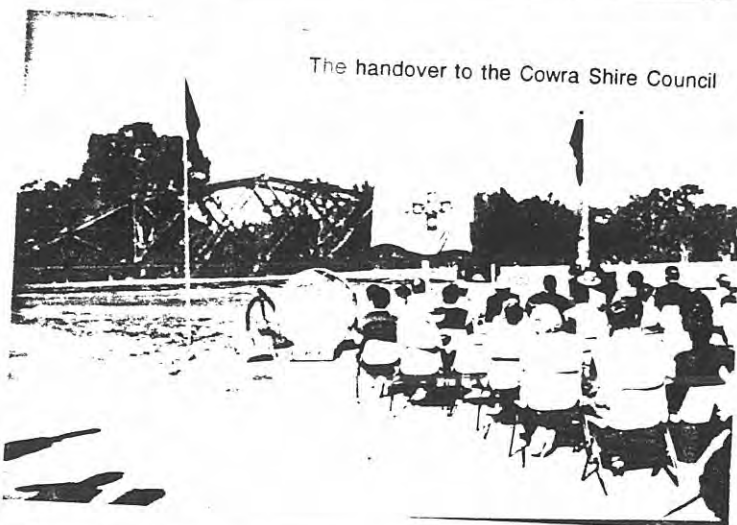
## OPENING CEREMONY

FRIDAY 28<sup>th</sup> SEPTEMBER 3 P.M.  
AT THE BRIDGE SITE COWRA  
ALL WELCOME!

(WET WEATHER VENUE - THE VISITORS CENTRE)

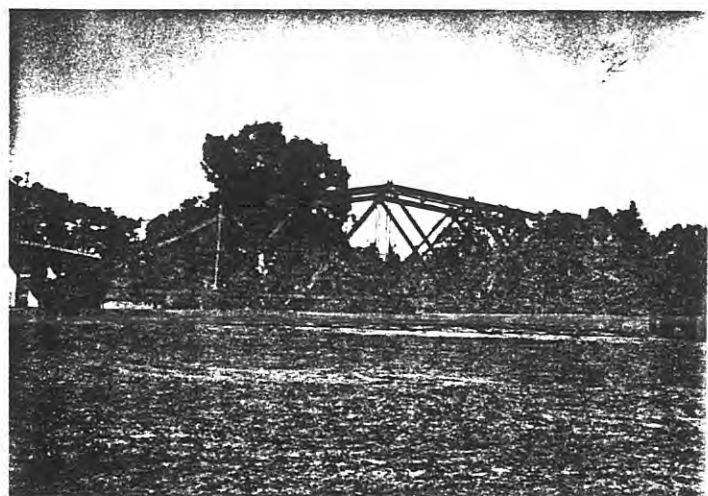
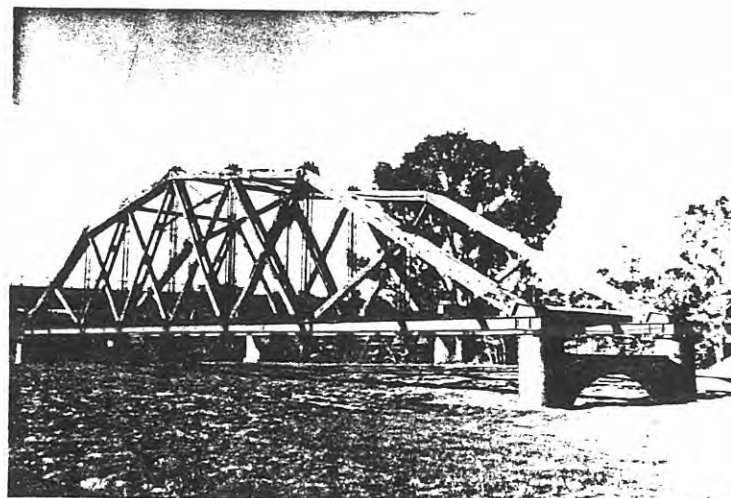
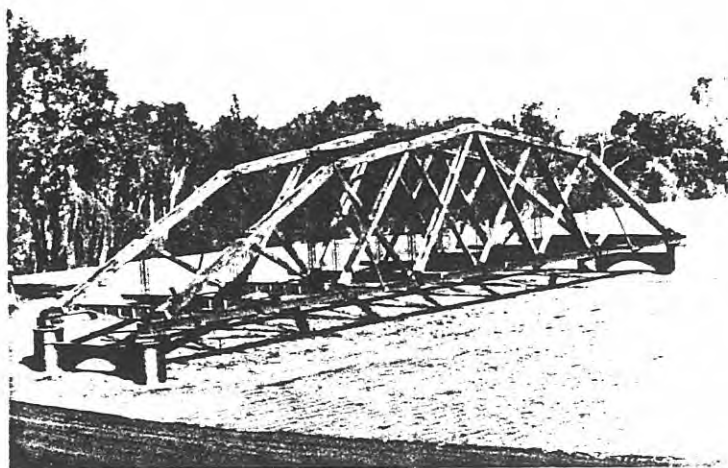
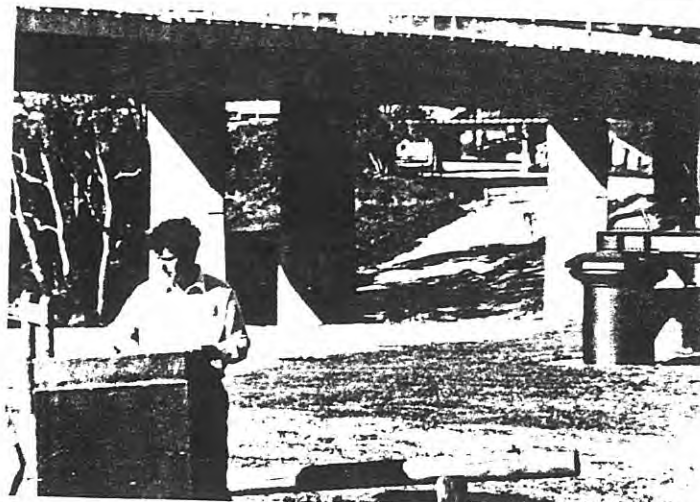
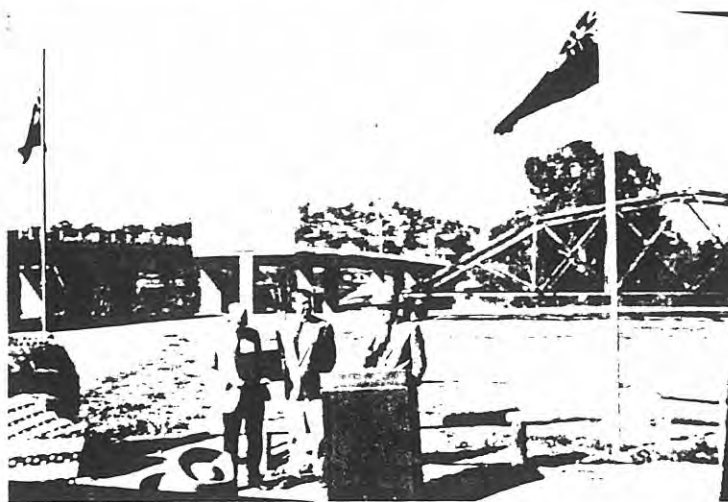


The handover to the Cowra Shire Council











Pictured at the Cowra Bridge Preservation Ceremony are UNSW Student rep Rob White, Crs Blume and Pengilly, Dr Don Fraser and Cowra Shire President Cyril Treasure with the plaque presented by the Institute of Engineers, Australia.

The Cowra Guardian, Wednesday, October 17, 1990. 5

## Engineers visit

The National President of the Institution of Engineers, Mike Sargent, visited Cowra last week and took in the restored Cowra Bridge span.

A plaque donated by the Institution of Engineers is attached to the bridge span.

The plaque recognises the bridge's historical and engineering features and is one of around ten made each year.

Something like this brings the community's attention to the role engineering plays in their lives or how it and their history," Mr Sargent said.

"It is quite easy to say, drive across your new concrete bridge and not wonder why it was put there or how it got there."

Mr Sargent said the bridge span was a unique and important engineering structure.

He said the products of engineering were not glossy, highly visible parts of our society.

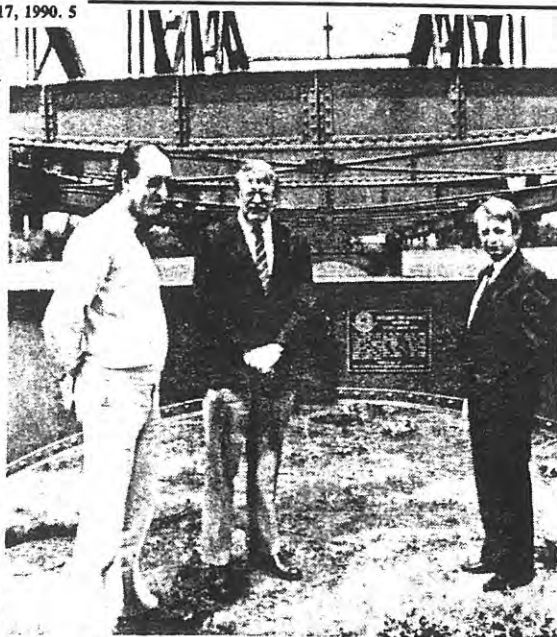
"It is about normal things such as roads, the water supply, concrete bridges and the like. It forms the infrastructure we survive by."

Mr Sargent was traveling through NSW visiting groups of engineers.

The Institution of Engineers is a professional body that works to plan activities for the future for engineers Australia wide.

It prepares submissions for the Government and community groups and lobbies the Government on issues affecting the Nation's vast range of engineers working in fields such as local government and private companies.

Mr Sargent commented that Cowra Shire roads were generally in better shape than other shires he had travelled through on his tour.



Cowra Shire engineer Mr Jim Finnimore with Graham Priddle of the NSW Institution of Engineers and National President of the Institution of Engineers Mr Mike Sargent inspecting the old Cowra Bridge Span.



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